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CORRELATES OF ACADEMIC PERFORMANCE OF COMMUNITY COLLEGE STUDENTS IN CAREER OR TRANSFER PROGRAMS--A PILOT STUDY.

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IN ORDER TO DETERMINE THEIR EFFECTIVENESS IN PREDICTING OR EXPLAINING STUDENT CHOICE, PERFORMANCE, AND PERSISTENCE IN REPRESENTATIVE CAREER PROGRAMS, A TEST BATTERY WAS ADMINISTERED TO ALL ENTERING FRESHMEN AT BRONX COMMUNITY COLLEGE, FALL, 1965. GRADE AVERAGES AND SCHOLASTIC APTITUDE TEST SCORES WERE ALSO COMPILED. ANALYSES OF DATA WERE COMPLETED SEPARATELY FOR STUDENTS IN TRANSFER PROGRAMS AND THOSE IN CAREER PROGRAMS. FOR EACH GROUP OF STUDENTS, THE MEANS, STANDARD DEVIATIONS, AND INTERCORRELATIONS WERE COMPUTED FOR THE 32 PREDICTOR VARIABLES AND THE TWO CRITERION VARIABLES. THOUGH TRADITIONAL PREDICTORS OF ACADEMIC SUCCESS WERE NOT EXPECTED TO BE PARTICULARLY USEFUL FOR STUDENTS IN CAREER PROGRAMS WHERE THE GOALS AND CRITERIA OF SUCCESS ARE DIFFERENT FROM THOSE IN MORE TRADITIONAL COLLEGE PROGRAMS, THEY WERE FOUND TO BE ALMOST AS GOOD HERE AS THEY ARE IN PREDICTING SUCCESS AT MANY 4-YEAR COLLEGES. SEVERAL OF THE EXPERIMENTAL TESTS SHOWED PROMISING VALIDITIES FOR PREDICTION IN THE CAREER PROGRAMS, WITH HIGHEST CORRELATIONS IN THE NURSING PROGRAMS AND LOWEST IN THE TECHNOLOGY PROGRAMS. (HS)

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Correlates of Academic Performance of Community College Students in Career or Transfer Programs: A Pilot Study

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UNIVERSITY OF CALIF.
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Abstract

This study was undertaken (1) to investigate the utility of a number of promising experimental measures for predicting the performance and persistence of community college students, and (2) to explore the goals and criteria for success within the various college programs. The major emphasis was on the career-oriented two-year programs.

Within the career programs, the Scholastic Aptitude Test and high school records had validities almost as good as they are at many four-year colleges. Several of the experimental measures showed promising validities within the career programs and/or distinctive patterns of means among the several program groups.

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CORRELATES OF ACADEMIC PERFORMANCE OF COMMUNITY COLLEGE STUDENTS IN CAREER OR TRANSFER PROGRAMS: A PILOT STUDY

Introduction

The sheer number of high school graduates has increased rapidly over the past several years. Although this increase in the size of the college-age population would require considerable expansion of higher education, it would not necessarily require fundamental changes in the traditional college admissions policies. However, coupled with the increase in the number of high school graduates has been a large increase in the proportion of high school graduates who seek some form of further education. In a recent paper, Martin Trow (1963) has pointed to the fact that whereas in 1940 college enrollments comprised about 15% of the college age group, in 1963 that figure was about 40%, and is still increasing at an average of 1% a year. A larger proportion of the college population comes today, certainly, from lower socioeconomic or occupational levels of the total population. Much of the burden of providing education beyond high school is now being carried by two-year community colleges, and, according to present indications, the proportion of all entering freshmen who attend two-year colleges will continue to increase.

The "open door" policies at many of these community colleges imply commitments to serve the needs of a wide range of students. These students have diverse needs, interests, and capabilities, and frequently the model of the traditional four-year college education is inappropriate for many of them. A growing number of two-year colleges are offering programs to prepare students for specific career opportunities in addition to the programs that are designed primarily to prepare students to transfer to four-year colleges.

The career-oriented community college programs raise several important issues. First, the major functions to be served by good prediction of performance in career programs are quite different from the functions traditionally served by scholastic predictors at the selective four-year college.

The career programs may involve students of lower ability (as measured by high school record and tests of scholastic aptitude) than other college students; the need to detect areas where remediation is required may therefore be more crucial. Also, the guidance problem may be more acute; students entering career programs commit themselves to a speciality and do not enjoy the degree of freedom, as do students in many other college programs, to shop around before settling on a major. Another aspect of the problem is that although high school guidance workers have information useful in counseling regular college applicants, information on students in career programs is generally lacking. In practice, students generally low in ability and performance may be shunted into career programs, when these programs may require particular skills rather than the simple absence of high ability to perform in academic work. All of these factors imply different and deeper needs than the selection function for which traditional predictors are employed by highly competitive colleges.

An additional problem is created by the fact that the course content and educational goals of specific career-oriented programs may be quite different from the more traditional goals of higher education. For example, work in drafting or dental technology may involve interests and skills quite different from the verbal facility necessary to handle a major in history or English. Course descriptions and program goals for the career programs suggest many traits that are considered important for a given career program but that are of no particular importance to (or of different importance in) academic performance in other programs: manual dexterity, quantitative perception of spatial differences, etc. When the performance to be evaluated may depend on observation rather than on memory, on building a piece of equipment rather than on writing a term paper, on performing a test procedure rather than on understanding the underlying scientific theory, tests like the SAT may be irrelevant.

The above considerations suggest that the variables which may prove to be useful for the community college needs may differ in content and in application from those represented in the traditional college admissions test or at least that additional instruments may be needed.

The primary purpose of the present study was to explore the utility of a number of promising measures from recent psychometric developments for predicting or explaining program choice, performance, and persistence in some representative career programs. The research was designed as a pilot study toward the identification of areas for more intensive study and the needs for test development.

Procedure

A. Institution and Sample

The sample of students for this study consisted of all full-time entering freshmen in the fall of 1965 at the Bronx Community College (BCC) which is a two-year unit of the City University of New York. BCC is a comprehensive two-year college which offers two major groups of programs: career programs and transfer programs. These two groups of programs are not mutually exclusive but are distinguished in terms of their major emphasis.

The transfer programs are designed to provide curricula which parallel university curricula and enable a student to transfer to a four-year institution at a later date. The career programs are designed to enable a student to enter an occupation directly upon the completion of the two-year program of study. The career programs are not intended to exclude the possibility of transfer to a four-year institution, but the curricular emphasis is on preparing a student for immediate employment as a semi-professional.

The specific programs within each of the two major categories of programs are listed in Table 1.

All analyses were based upon students within specific programs or groups of programs. Separate analyses were performed for all students within the transfer programs and for all students within the career programs. Within the transfer programs, additional analyses were performed for the subgroup of students in the liberal arts program and the subgroup of students in the engineering science program. Separate analyses were also performed for three subgroups of students within the career programs: business, technologies, and nursing. The business subgroup included students enrolled in the accounting, retailing, or secretarial program, and the technologies subgroup included students enrolled in the chemical, engineering, or the medical lab technology programs. In Table 2, the subgroups used for purposes of analysis are listed along with the number of students in each subgroup for whom complete data were available.

B. The Variables

In addition to obtaining high school grade averages and College Board Scholastic Aptitude Test (SAT) scores for the above students, the following tests and questionnaire were administered:

1. The Background and Experience Questionnaire (BEQ). The BEQ is an experimental self-report questionnaire of personal history items developed by

Table 1

Programs of Study within Major Category

Transfer Programs	Career Programs
1. Business Administration	1. Accounting
2. Pre-Pharmacy	2. Retailing
3. Engineering Science	3. Secretarial
4. Liberal Arts	4. Chemical Technology
	5. Engineering Technology
	6. Medical Lab Technology
	7. Nursing

Table 2

Subgroups Used for Analyses and the Number of Students with Complete Data within Each Subgroup

Programs	Number of Students
Transfer Programs	379
Liberal Arts	277
Engineering Science	57
Career Programs	250
Business	89
Technologies	64
Nursing	97

Educational Testing Service (Maier & Anderson, 1964). It yields a variety of factual information. For the present study, nine experimental or a priori "scale" scores were obtained as summaries of some of the major content; the nine scales were:

(a) Television Viewing
(b) Study Habits
(c) Work Experience
(d) Future Plans
(e) Socioeconomic Status
(f) Non-academic Interest
(g) Reading Habits
(h) Parental Encouragement
(i) Mechanical Knowledge

A detailed description of these scales and a copy of the questionnaire are presented in Appendix A.

2. The Experimental Comparative Prediction Battery (CPB). The aptitude tests in this battery are brief, "factorially pure" tests (French, 1964a). The following tests from this battery were used in the present study:

(a) Following Directions
(b) Paper Folding Test
(c) Year 2000
(d) Similar Figures
(e) Arithmetic Speed Test
(f) Sentence Completion Test (Memory Section)

Detailed descriptions of these tests are given in Appendix B.

3. The Academic Interest Measure (AIM). This is an experimental interest inventory with "...items focused on academic kinds of activity that are familiar to students..." (Halpern, 1965, p. 1). The present form of AIM consists of 192 activity statements and yields 12 scale scores with 16 items on each scale. (French, 1964b; Halpern, 1965). The 12 scales are listed below:

(a) Biology
(b) English
(c) Fine Arts
(d) Mathematics
(e) Social Sciences
(f) Secretarial
(g) Physical Sciences
(h) Foreign Languages
(i) Music
(j) Engineering
(k) Home Economics
(l) Executive

4. The Personal Values Inventory (PVI). This instrument is a self-report questionnaire developed by George Schlesser, which was designed to measure motivational factors not included in conventional scholastic aptitude tests (Schlesser & Finger, 1965). Scores on the following two PVI scales were used in the present study:

(a) Persistence
(b) Self-control and Deliberateness

The criterion information was collected at the end of the first semester and included first semester grade-point average (GPA) and persistence or second semester status (SSS). SSS was defined as: continuing as a full-time student the second semester (SSS = 3), continuing part time (SSS = 2), and not continuing the second semester (SSS = 1).

In addition to obtaining the above data, a brief questionnaire was administered near the end of the first semester which consisted of questions dealing with the student's satisfaction with the college and with his program of study. A copy of this questionnaire and a description of the way in which it was scored are included in Appendix C.

Interviews were also conducted with a sample of faculty members, most of whom were department heads. The recorded discussions were directed towards defining program objectives and course goals, program and course content, student prerequisites, the means by which students are evaluated, and the definition of successful performance. The purposes of these interviews were to provide background material for the examination of the statistical results of the study, and as a step toward the more formal incorporation of improved criteria in later studies.

C. Analysis

For each of the subgroups of students listed in Table 2, the means, standard deviations, and matrices of intercorrelations were computed for the 32 predictor variables and the two criterion variables. Stepwise multiple correlations were also computed for each of the two criteria within each of the subgroups listed in Table 2.

Results

A. Traditional Predictors: Career Programs

The means, standard deviations, and intercorrelations listed in Table 3 are based on students enrolled in career programs for whom complete data were available. The first two variables are the verbal and math sections of the Scholastic Aptitude Test (SAT-V and SAT-M). The third variable is high school grade average (HSGA). The fourth and fifth variables are the criterion variables; GPA stands for first semester grade average and SSS, as previously noted, stands for second semester status.

The data in the top section of Table 3 are based on students in all of the career programs. The three lower sections of Table 3 are based on subgroups of students from the top section of the table. Nursing is the only one of these subgroups that includes a single specific program of study. Technologies include chemical, engineering, and medical technology programs. Business includes accounting, retailing, and secretarial programs.

Means on SAT-V and SAT-M for the engineering technologies fall above the national averages for two-year college students (Seibel, 1965); for students in nursing and business, the means are slightly lower, but are still at or near the national averages for two-year college students. The two latter groups are slightly above the technologies group on high school average. It should be noted, of course, that all the students in nursing, and the preponderance of students in business, are female, while virtually all the technology students are male.

Perhaps the most significant finding from the data in Table 3 is that the correlations of the SAT and high school grades with first semester grade-point

Table 3

Traditional Predictors, Means, Standard Deviations, and Intercorrelations for Students Enrolled in Career Programs

All Career Students (N = 250)

Variable	1	2	3	4	5	Mean	SD
1. SAT-V	1.0	.48	.30	.35	.13	398	88
2. SAT-M		1.0	-.15	.20	.15	405	87
3. HSGA			1.0	.33	.11	80.1	4.3
4. GPA				1.0	.46	1.96	.80
5. SSS					1.0	1.69	.61

Nursing (N = 97)

	1	2	3	4	5	Mean	SD
1. SAT-V	1.0	.56	.18	.57	.28	391	85
2. SAT-M		1.0	.04	.43	.30	380	88
3. HSGA			1.0	.27	.07	80.9	3.2
4. GPA				1.0	.48	1.82	.66
5. SSS					1.0	1.64	.61

Technologies (N = 64)

	1	2	3	4	5	Mean	SD
1. SAT-V	1.0	.35	.24	.14	.07	416	85
2. SAT-M		1.0	-.13	.18	.09	465	74
3. HSGA			1.0	.30	.24	77.8	4.7
4. GPA				1.0	.57	1.80	.92
5. SSS					1.0	1.66	.67

Business (N = 89)

	1	2	3	4	5	Mean	SD
1. SAT-V	1.0	.47	.33	.39	.05	393	92
2. SAT-M		1.0	-.01	.20	.07	389	75
3. HSGA			1.0	.38	.03	80.8	4.5
4. GPA				1.0	.31	2.22	.78
5. SSS					1.0	1.78	.56

average are somewhat lower than are usually found for the traditional four-year college. However, these validities are not as low as might be expected considering the nontraditional nature of these programs nor so low as to have no utility. It is of interest to note that the highest validities for SAT-V and SAT-M were found for the nursing program students and the lowest for those students enrolled in the technologies. In terms of common course requirements and grading practices, the nursing students formed the most homogeneous group and the technologies students formed the most heterogeneous group.

B. Traditional Predictors: Transfer Programs

The findings with the above set of variables for the transfer programs were quite different from those for the career programs. Whereas the SAT and high school grade average were found to yield moderate validities for first-semester GPA within the career programs, these validities were near zero or negative within the transfer programs. The means, standard deviations, and intercorrelations of these variables are reported in Table 4 for students enrolled in the transfer programs. The results in the top section of Table 4 are based on all of the transfer programs combined and the results in the two lower sections are based on two subgroups of transfer students (Liberal Arts and Engineering Science).

The means on the SAT-V and SAT-M for the two subgroups of transfer students and for all transfer students fall well above the national averages for two year colleges (Seibel, 1965), and are, of course, somewhat higher than the corresponding means for the career program students at BCC. On HSGA, the combined transfer group fall slightly lower than the combined career group. There was a greater restriction in range on the three predictor variables SAT-V, SAT-M, and HSGA within the transfer programs than there was within the career programs

Table 4

Traditional Predictors, Means, Standard Deviations, and Intercorrelations for Students Enrolled in Transfer Programs

All Transfer Students (N = 379)

Variable	1	2	3	4	5	Mean	SD
1. SAT-V	1.0	.00	-.36	-.14	-.03	455	65
2. SAT-M		1.0	-.48	-.06	-.11	481	73
3. HSGA			1.0	.19	.10	78.4	2.8
4. GPA				1.0	.41	2.03	.62
5. SSS					1.0	1.82	.46

Liberal Arts (N = 277)

Variable	1	2	3	4	5	Mean	SD
1. SAT-V	1.0	-.06	-.41	-.08	.00	458	63
2. SAT-M		1.0	-.52	-.02	-.15	468	64
3. HSGA			1.0	.22	.13	78.4	2.6
4. GPA				1.0	.40	2.05	.60
5. SSS					1.0	1.72	.46

Engineering Science (N = 57)

Variable	1	2	3	4	5	Mean	SD
1. SAT-V	1.0	.15	-.40	-.26	-.04	452	64
2. SAT-M		1.0	-.53	-.09	-.03	541	77
3. HSGA			1.0	.04	-.04	77.9	4.0
4. GPA				1.0	.46	1.88	.71
5. SSS					1.0	1.74	.55

as can be seen by comparing the standard deviations of these variables for the two programs. Although the restriction in range would account for observed validities of smaller magnitude than would be expected without such restriction, it does not account in and of itself for the near zero and negative validities that were observed.

The near zero correlations between SAT-V and SAT-M and the negative correlations between HSGA and the SAT scores suggest that there may have been explicit selection on all three of these variables or on their composite. A scatterplot of the composite SAT-V plus SAT-M with HSGA is presented in Figure 1 for students in the liberal arts program. The solid diagonal line corresponds to the liberal arts admissions requirement (which is that an applicant have a composite score, X, greater than or equal to 156, where X = (.0345) (SAT-V + SAT-M) + HSGA + 49.07). Thus, the fact that none of the points in the scatterplot fall below this line is due simply to the selective admissions policy which establishes a cutting score for the composite based solely on these variables, and holds to this policy.

Of greater interest is the severe self-selection which is apparently occurring among students whose scores on these variables are high enough to gain them admission to one of the four-year colleges of the City University of New York. The broken line in Figure 1 corresponds to the admissions policy at Hunter College which in the fall of 1965 required that a student have either a HSGA greater than or equal to 82 or a composite score greater than or equal to 162, where the composite is defined in the same way as at BCC (X = (.0345) (SAT-V + SAT-M)+ HSGA + 49.07). Hunter is the nearest four-year college of the City University of New York, and, as can be seen, few students in the liberal arts program at BCC fall above the Hunter admissions requirements.

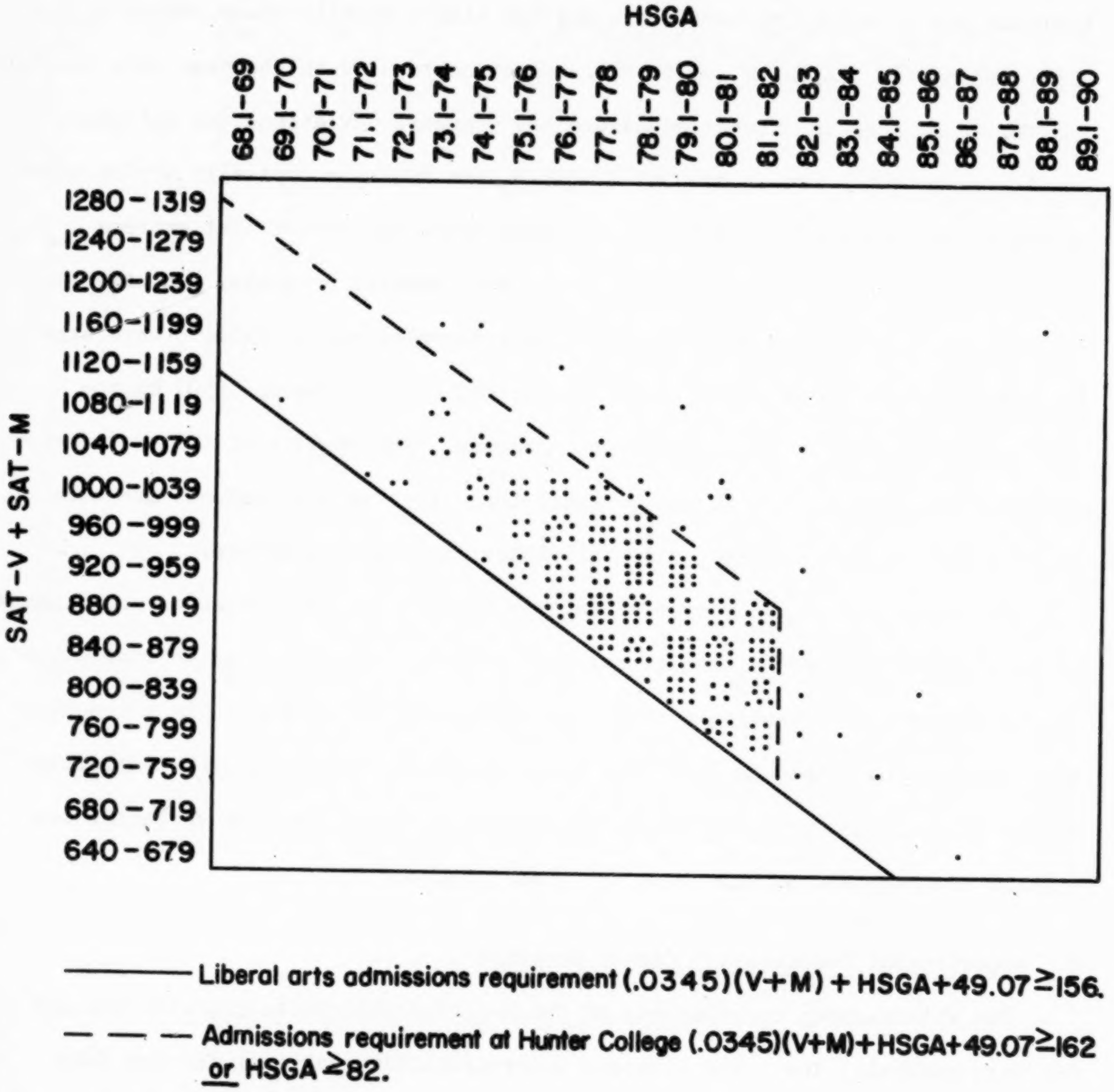

Fig. 1. Scatterplot of SAT-V plus SAT-M with HSGA for liberal arts students.

The combination of a sharp cutoff on the lower end of the above composite variable due to selective admissions and the almost equally sharp cutoff on the upper end of the composite due to self-selection results in the near zero validity coefficients. For an unselected sample the standard deviations and intercorrelations among the predictors SAT-V, SAT-M, and HSGA are typically of the order of magnitude presented in Table 5. To demonstrate the effect that extreme selection, such as that encountered in the BCC transfer programs, can have upon validities, the standard deviations and intercorrelations in Table 5 were used to perform a correction for multivariate selection (Gulliksen, 1950) on the observed validities in the liberal arts program. The results of this correction are reported in Table 6. As can be seen, the corrected correlations are more in line with typical college grade validities for these variables.

The corrected validity coefficients in Table 6 are not presented as estimates of the true validities in the liberal arts program, but rather as an indication of the effect that selection can have upon observed validities. The correction also demonstrates that the fact that these variables have negligible validities within the selected group of students does not indicate that the variables are invalid for purposes of selection for these programs.

C. Experimental Predictors: Career Programs

The within-group correlations of the experimental predictors with GPA and SSS were generally low. The complete intercorrelation matrices for the four groups of career program students are reported in Appendix D. Among the three groups of programs (business, technologies, and nursing), the validities were generally lowest for the technologies group and highest for the nursing group.

The single experimental test with the most promising validities was the Year 2000 test from the Experimental Comparative Prediction Battery. (A brief

Table 5

Typical Standard Deviations and Intercorrelations for an Unselected Sample of High School Seniors

Variable	Intercorrelations 1	 2	 3	SD
1. SAT-V	1.00	.60	.45	100
2. SAT-M		1.00	.40	100
3. HSGA			1.00	4

Table 6

Validities before and after a Correction for Multivariate Selection:

Liberal Arts Program

	Correlations with First Semester GPA	
Variable	Before Correction	After Correction
1. SAT-V	-.08	.34
2. SAT-M	-.02	.38
3. HSGA	.22	.64

description of the nature and content of the tests in the Comparative Prediction Battery is given in Appendix B.) The Year 2000 test is a measure of accuracy in following directions of increasing complexity in a clerical task. The correlations of the Year 2000 test with first semester GPA are listed in the first column of Table 7 for the above three groups of career programs as well as for the combined career programs. In all cases, the validity of the Year 2000 test was one of the highest validities within each group of students.

In the second column of Table 7, the multiple correlations of the Year 2000 test and HSGA with first semester GPA are presented for these programs. Relatively high multiple correlations were obtained by adding HSGA to this 10-minute test of 20 items. However, these results, while promising, must only be taken as tentative since they have not been cross-validated and since the test was selected from among a large number of tests for having the most promising validities.

For the group of students in the nursing program, four other experimental variables had moderate to sizeable validities. All four of these predictors were brief tests in the Experimental Comparative Prediction Battery. In addition to the correlation of .53 between the Year 2000 test and GPA, the correlation with GPA was .42 for the Following Directions test, .40 for the Paper Folding Test, .39 for the Sentence Completion Test, and .30 for the Arithmetic Speed Test. Thus, success in the nursing program seems to be associated with the two measures of ability to follow directions, spatial visualization, meaningful memory, and number facility.

For the business program students, two predictors besides the Year 2000 test had correlations with GPA of .30 or better. These were the Persistence scale of the PVI ($r = .37$) and the Study Habits scale of the BEQ ($r = .30$).

Table 7

Correlations of the Year 2000 Test with First-Semester GPA and Multiple Correlations for the Year 2000 Test and HSGA with GPA: Career Programs

Program	Correlations	Multiple Correlations
All career	.39	.52
Nursing	.53	.59
Technologies	.30	.38
Business	.42	.56

Both of these measures focus on self-report of the individual's typical behavior patterns in independent study or on his motivation for academic work. Within the technologies program, only the Year 2000 test had a positive correlation as high as .30. However, three of the interest scales of the AIM had negative correlations exceeding .30 in absolute value (Executive scale, r = -.36; Physical Sciences scale, r = -.33; and the Engineering scale, r = -.30).

D. Experimental Predictors: Transfer Programs

None of the validities within the transfer programs were very high; this finding is similar to the results for the traditional predictors within the transfer programs. Such a result may be due, in large part, to the implicit selection on the experimental variables deriving from the explicit selection on SAT-V, SAT-M, and HSGA discussed above.

The complete intercorrelation matrices for the three groups of transfer students are reported in Appendix E. None of the zero order validities for all transfer students combined or for those transfer students in the liberal arts program exceeded .30 in absolute value. For the group of students in the engineering science program, four experimental variables had correlations with GPA higher than .30 in absolute value. These predictors were the Persistence scale of the PVI (r = .39), the Work Experience scale of the BEQ (r = -.34), the Non-academic Interest scale of the BEQ (r = -.34), and the Self-control and Deliberateness scale of the PVI (r = .33). In evaluating these validities it should be noted that the engineering science group contained only 57 students.

E. Multiple Correlations

Stepwise multiple correlations were computed within each of the above groups of students. For a given group of students, multiple correlations with GPA were computed for 1, 2, 3, 4, and 5 predictors. The multiple correlations at each step, the predictor variables involved, and the standard regression weights are reported in Appendix F.

As is obvious from the zero order correlations, the prediction from multiple correlations based on 2, 3, 4, or 5 predictors was relatively good within the career programs and the engineering science group while relatively poor for the combined transfer and liberal arts programs. The highest zero order validities and the multiple correlations for 2, 3, 4, and 5 predictors are listed in Table 8. For the particular variables involved at each step for a given group of students the reader is referred to Appendix F.

Although the multiple correlations in Table 8 are relatively high with the exceptions of the liberal arts program and the combined transfer programs (liberal arts and engineering), it should be remembered that they have not been cross-validated, that they are based on the best combination of variables from a battery of 32 predictors, and that some of the sample sizes are quite small.

F. Mean Profiles for Student Programs

Although the within-group validity results were of primary interest in the present study, between-group mean differences are of interest for guidance purposes. The group means and standard deviations for the 32 predictor variables and first-semester GPA are reported in Appendix G for the groups of students formed by student program, for males and females, and for the three groups of students formed by second semester status (continuing full time, continuing part time, and not continuing).

Because of incomplete data on all students, the number of students within a given group changes according to the variable in question and is higher than the

Table 8

High Zero Order Validities and Stepwise Multiple Correlations with GPA for 2, 3, 4, and 5 Predictors by Student Program

Program	N	Zero Order Validities	Multiple Correlations--Number of Predictors 2	3	4	5
Combined Career	250	.39	.52	.55	.57	.58
Business	89	.42	.57	.62	.65	.66
Nursing	97	.57	.63	.66	.68	.69
Technologies	64	.36	.43	.49	.53	.59
Combined Transfer	379	.21	.26	.28	.31	.33
Engineering Science	57	.39	.60	.63	.67	.68
Liberal Arts	277	.22	.27	.31	.33	.35

corresponding N on which the correlation results were based since all cases with partial data were used to compute the means and standard deviations.

Other than the expected differences in SAT scores between program groups, the most interesting mean differences occurred on the scales of the Academic Interest Measure. The group means on the 12 AIM scales are presented in Figure 2 for the three groups of career program students. The means for the business program are distinctly higher on the Secretarial and Executive scales than are those of the other two programs. The nursing students are higher than the other two groups of students on the Home Economics, Foreign Languages, and the Biology scales, while the technology students are higher than the other two groups on the Mathematics, Physical Sciences, and Engineering scales. For the data in Figure 2, a between-group difference of approximately three points on a given scale would yield a t-ratio significant at the .01 level.

The results for the students in the two major transfer programs are equally distinctive. The AIM mean profiles for the two groups of transfer students are reported in Figure 3. Students in engineering science stand high on the same three scales as the career program technology students, and the liberal arts students are high on the Social Sciences, Foreign Languages, and English scales.

G. End of Term Questionnaire

Two part scores were computed for the end of term questionnaire[1] as is indicated in Appendix C. The means and standard deviations for the two parts

---

[1] The administration of this questionnaire occurred during the New York City transit strike which resulted in a considerable amount of missing data. The majority of the questionnaire data that was obtained had to be collected by mail. Due to the large amount of missing data and the possibly select nature of the sample which returned these questionnaires, it was decided not to include the questionnaire in the correlational analyses.

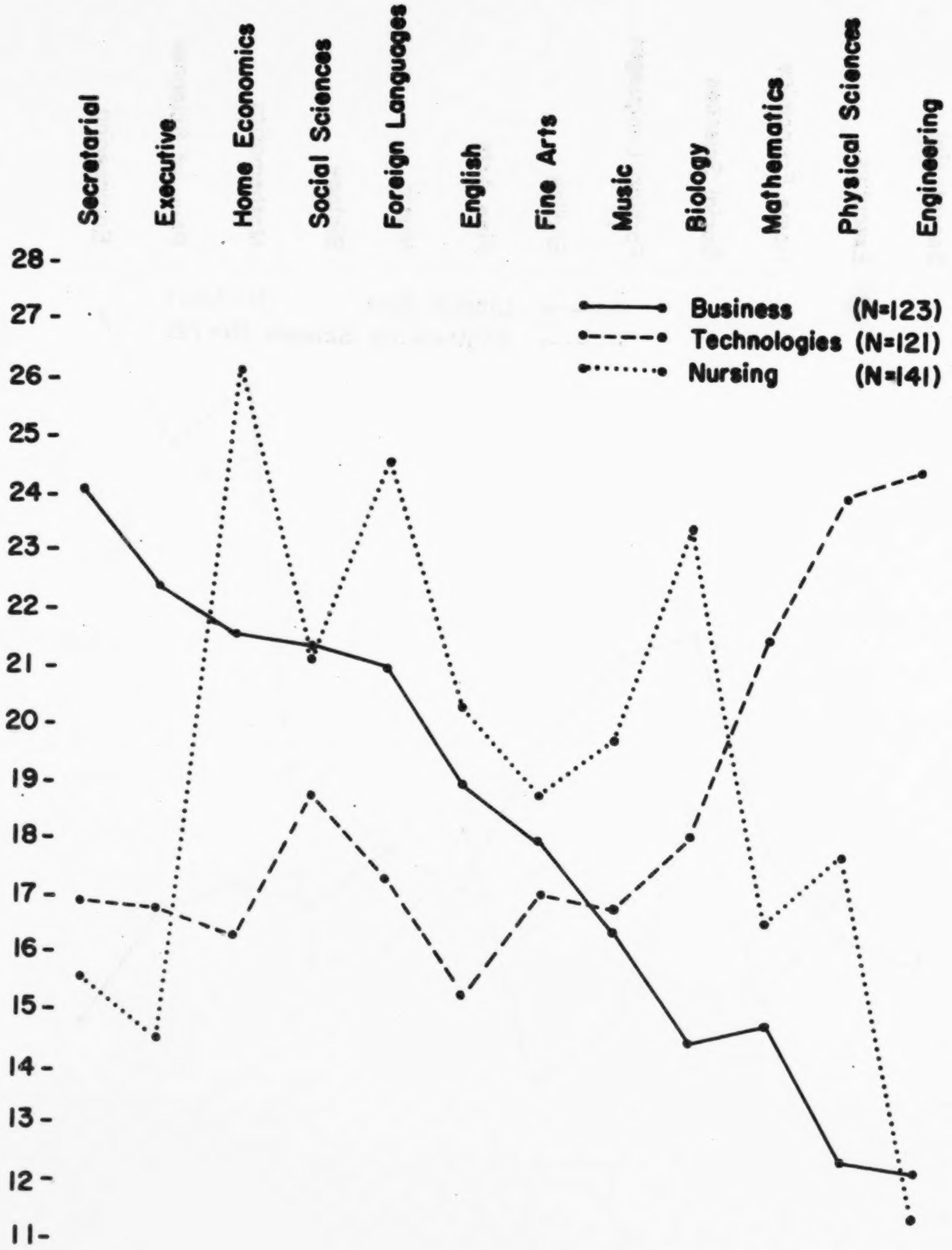

Fig. 2. Group means on academic interest measure: Career programs

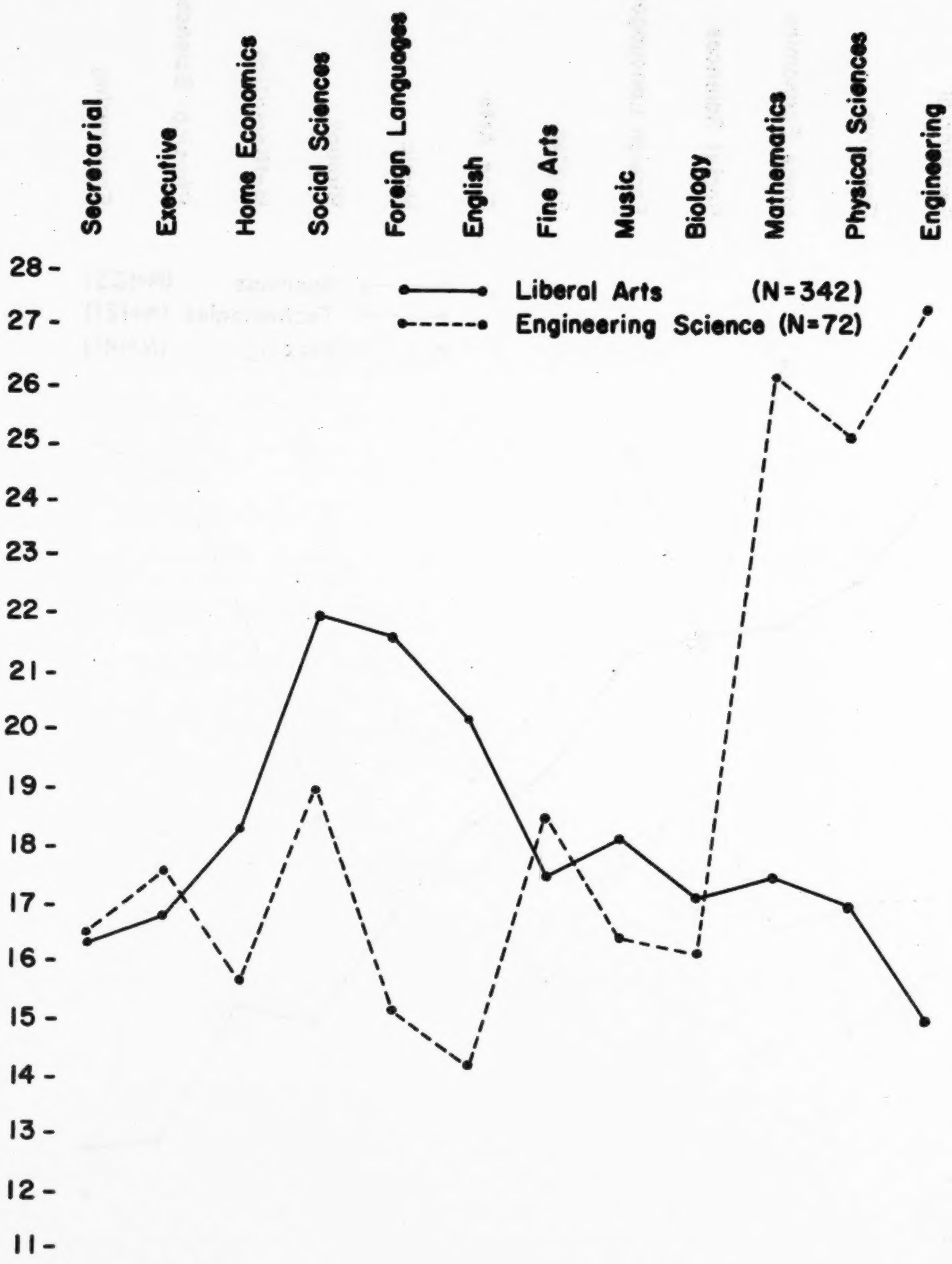

Fig. 3. Group means on academic interest measure: Transfer programs

and their sum are presented in Appendix H for each of the subgroups of students. The correlation between the two part scores is also presented for each group. The items were scored 1 through 5, with 5 indicating strong agreement with a favorable statement or strong disagreement with an unfavorable statement. Therefore, a high score corresponds to high reported satisfaction.

Differences between the groups were generally small and all groups tended to agree with favorable items and disagree with unfavorable items. Although the means for students in career programs were slightly higher than those for students in the transfer programs, there was extensive overlap. An investigation of group differences in terms of item response frequencies resulted in few interpretable differences.

H. The Interviews with Faculty Members

The main purpose of the interviews was, of course, to obtain some general and preliminary information about the kinds of demands made on students and about grading practices and content of evaluation procedures, with particular emphasis on the career programs. It was also felt that the perception of modal strengths and weaknesses of their students in this setting would offer useful suggestions for designing a prediction or placement battery or for interpreting whatever results might be obtained.

Two interviewers from the ETS research staff, led by the junior author and working together, met in one- to two-hour discussion sessions with each of 11 department heads. In most cases, several of the senior teaching staff, mostly persons with major responsibilities for career programs, joined these sessions. In all, comments and reactions were obtained formally from 33 faculty members.

An interview guide was used loosely, primarily as a checklist to insure completeness of coverage but also to provide studied, nondirective leads for areas of importance.

Open-ended questions involved program goals, prerequisites for entering students, the kinds of skills and attitudes the programs develop, reasons for failure or attrition, areas students find particularly difficult, jobs (and job requirements) for entry occupations for students, grading practices, etc.

All interviews were electrically recorded to permit later, leisurely analysis by several persons.

No systematic analysis of this material was made, but several findings can be stated with some confidence.

The first of these has to do with the kinds of abilities and proficiencies the teaching staff felt were essential to academic success. The most frequently mentioned was reading comprehension (and speed, in some cases), with oral and written communications skills (effectiveness of expression, spelling, grammatical usage) a close second. Virtually every representative of career programs, and many of those concerned with transfer programs, saw this kind of verbal proficiency the great differentiator of successful vs. unsuccessful students. Many students, the faculty reported, floundered with any written instructions or directions or had great difficulty abstracting or summarizing and reporting written material. For the most part, these difficulties were perceived as deficiencies of past training and experience or of cultural background, rather than of verbal aptitude or intelligence.

A second area of concern involved one or another label for general mental ability: ability to reason, to see relationships, to apply logic, or, in one case (accounting), "to have an IQ of 125 or more." Numerical skills were also mentioned from time to time, but, except among members of the mathematics department, not particularly emphasized. Staff in accounting specified an "interest in playing with numbers," rather than any deeper mathematical ability, as the crucial characteristic.

Staff in the engineering technologies were of accord on the importance of mechanical knowledge or technical information, as well as for ability to visualize and manipulate concepts in space. Some students in the technologies could not tell whether a shaft would likely be 2, 20, or 200 inches in diameter, or whether an automobile would require 20, 200, or 2000 horsepower: experiences which might permit such a feel were apparently missing for many of the failing students or for those students requiring large amounts of special attention. In this regard, one may speculate that "cultural deprivation" for a young person brought up in impoverished urban settings extends beyond books and social graces. Examination materials shared with the interviewers were found generally to involve a great many spatial or design questions.

In the laboratory areas, manual dexterities and concern for accuracy were mentioned occasionally; there were some evidences that clumsiness, or fear of apparatus, or inability to put up equipment neatly depressed assigned grades.

Representatives of several program areas held considerable briefs for personality characteristics. In Secretarial Science, alertness, poise, styles of dress and grooming, and a "good ear" were given considerable emphasis. Retailing staff specified outgoing, aggressive, imaginative students as most desirable. Nursing, with some considerable history of total staff concern for grading (particularly in the clinical program), named such traits as flexibility, skill in interpersonal relations, and ability to organize and plan.

Little concern with study habits and attitudes of students was apparent. This may be a better explanation for the student than for the teacher; or, in this case, the formal independent study demands may not be particularly great.

Beyond the particular factors the faculty members felt, from their experience at Bronx Community College, were crucial for success, however, several other flavors or themata in the discussions seemed worthy of note. Perhaps most important for the purposes of the present pilot study was the frequent vigorous and spirited disagreement among the several faculty in the departmental or program groups on course objectives or program goals. These debates, in most cases threatening to usurp other potential interests of the interviewers, seemed to stem from real differences in perception of the role of the graduate or in educational philosophy rather than from personal frictions. In other words, there was often honest and open disagreement on what should be emphasized in training and evaluating career program students. Such disagreement could, of course, produce a variety of sources of variance in the grade averages. How easy these differences would be to resolve, or if the differences are indeed real deserves further study.

A second pervasive thema has that counselors in the high schools had little insight into the prerequisites of the community college career programs, or into what may be involved in the technical careers. Counselors are seen as dumping the nonverbal, nonnumerical, mediocre achievers into career programs, regardless of particular interests or other aptitudes. The complaint seemed not so much rooted in a resentment of being associated with mediocrity but rather to come from a conviction that the counselors were not knowledgeable in the training and work demands of a body of vocations and therefore were inept in interpreting the challenges of the field or in shaping the aspirations of appropriate talents.

A third pervasive element in the discussions was that virtually every faculty member, no matter where he may have stood on the educational philosophy debates, seemed to gauge his success in terms of how many career program students were moved over into the transfer program. Almost all of the faculty seemed to have a personal warmth and interest in the street child who, via education, might lift himself by his bootstraps: there was a marked and impressive dedication to the young person victimized by the city or by caste and class. (For a reaction to this element in the discussions, see the report by Casserly (1966), who served as one of the interviewers.) Yet, the press for upward mobility through too much value on moving from the career to the transfer program contains some strong elements of caste and class itself. Again, the question is raised, particularly in view of the relationships found between the traditional predictors and grades in the career programs, if the maintenance of such open-endedness may jeopardize the other function of preparing technicians. The basic issue is one for solution by vocational and educational specialists, educational administrators, and manpower officials, with awareness that status in the two-year college may be associated with fit with the narrow view of academic reputability in the traditional college.

Some minor attention was given in the interviews to grading practices. This area was not pursued intensively, but there were general evidences that the usual emphasis on quizzes and examinations prevailed across programs. Daily homework assignments were, however, not graded in many instances; instead, some emphases resulting in as much as 33% of the final course grade were reported on class or laboratory work. Later study of criterion problems may, therefore, in some instances involve some observation in the classrooms.

Discussion

Although traditional predictors of academic success were not expected to be particularly useful for students in career programs where the goals and criteria of success are different from those in a more traditional college program, these predictors were found to be almost as good as they are at many four-year colleges. The validities for SAT-V, SAT-M, and HSGA within the career programs suggest that the means by which students are evaluated in their course work are much like the means by which students are evaluated in more traditional academic programs. Interviews with faculty members would tend to support this interpretation.

Several of the experimental tests showed promising validities for students in career programs. This was particularly true of the brief Year 2000 test from the Experimental Comparative Prediction Battery. However, the results must be considered quite tentative, as the initial battery had a large number of variables and the results were not cross-validated.

In addition to the variables with consistently high validities within the career programs, the scales of the Academic Interest Measure proved to be of considerable interest. The AIM scales were found to yield quite distinct mean profiles for students in the three groups of career programs, which suggests that this information might be quite useful in precollege guidance activities with students considering community college programs or in study.

The validities within the three groups of career programs were found to be generally highest for the students in the nursing program and lowest for students in the technologies program. Interviews with faculty members indicated that in nursing there has been at this college a long-term and comprehensive staff effort to perfect grading practices, while in the technologies there appeared considerable disagreement as to what the technician should learn or should be. It might also be noted that the technologies students embraced three different specialties. Thus, there was a greater heterogeneity in the courses taken by the technologies students than there was for the nursing students, which might also explain the lower validities in the technologies group. In any event, the criterion may indeed be an all important element in studies such as this.

The generally negligible validities within the transfer programs were considered to be due primarily to the combination of the selective admissions policy based on a composite of SAT-V plus SAT-M and HSGA and the apparent self-selection of students with records that enable them to enter one of the four-year units of the City University of New York. As was the case among the career programs, the AIM scales resulted in quite distinct mean profiles for the two groups of transfer students that were identified.

One may speculate on the apparent paradox that where conventional predictors should work, they fail, and where they should not, they succeed. In the former instance, a reasonable admissions policy itself, within the framework of an equally reasonable system of higher education, acts to preclude the usual relationships between ability and academic performance in college. In the latter instance, it would seem that whether or not course content or instructional goals for the career programs stress capabilities different from those required in traditional academic work, the instructors may fall back on conventional systems of evaluating academic performance. This finding may stress the importance in these programs of looking more intensively into the definition of successful performance; some concern with reexamination of instructional goals and with definition of success in the later work role is indicated. Or, if a reasonable goal for the faculty members in these programs is to use them to discover and develop grist for the transfer mill (and the interviews with faculty members suggest they behave in this way), then the conventional predictors may be applied unabashedly.

Implications for Further Study

Perhaps the most significant finding in this pilot study has to do with the pattern of regression of grades on the predictors, shaped on one side by the self-selection that occurs in the particular system of colleges, and on the other by a cut-off in the admissions procedure. Community colleges in other settings may or may not have similar forces operating. This finding at BCC, together with the multiplicity of programs and student populations (i.e., adults, evening students, etc.), would indicate that the general problem of prediction of performance must be studied over a range of institutions.

A second major implication has to do with the apparent effectiveness of conventional predictors and the paucity of results with the experimental aptitude tests. As in other cases, a hastily aimed shotgun, even one loaded with "pure factors," is not likely to bring down much exciting game. This raises the necessity of looking closer to home--as the interviews with faculty suggested--with tests in such areas as reading comprehension, writing and grammatical usage, simple number skills, general information on science, technology, mechanical principles, and clerical speed and accuracy. There is also, in the short-term criterion available at this point, the need to look beyond an introductory (and possibly adjustive) first-term grade to performance over the two years of work.

A third implication of the findings may be drawn in part from the effectiveness of the conventional predictors in the career programs and in part from the vigorous debate among the faculty groups interviewed as to program content and goals. The SAT may be predicting in the career programs an existing criterion rather than a proper criterion. Frederiksen's (1954, pp. 98-99) similar finding with a training program for gunners' mates, where such relationships shrunk and new predictors emerged when evaluation was based on performance standards rather than on verbal content of technical manuals, reinforces the need in future studies for devoting careful attention to the definition and measurement of effective performance. With relatively discrete vocational fields involved, and with the expectation that community college students may at graduation scatter geographically less than other college students, criterion study could and should be extended to job success.

Finally, note should be taken of the apparent potential utility of the "noncognitive" measures provided by the Personal Values Inventory and the Academic Interest Measures. Perhaps these findings, contrary to the bulk of other work with such instruments, suggest a greater role for motivational variables and/or imply that prediction may be augmented by the greater diversity of discrete types and levels of programs of study. Replication is necessary, of course, but there is no reason yet to abandon this kind of potential predictor.

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APPENDIX A

The Background and Experience Questionnaire

APPENDIX A

The Background and Experience Questionnaire

The form of the BEQ used in the present study was a slightly modified version of the original BEQ developed by Maier and Anderson (1964). The modifications involved minor changes in wording of a few of the questions to make them appropriate for entering college freshmen. The scales used were also slightly modified or in some cases made up of a combination of two of the original scales. This was done primarily to reduce the total number of scales.

The Television Viewing scale is a combination of the original Low Level and Medium Level TV scales. Items 6 through 10 and 14 through 17 were summed to yield a total score on the TV Viewing scale, where all items were scored as follows:

omit = 0
alternative A = 0
alternative B = 1
alternative C = 2
alternative D = 3

The Study Habits scale was defined by the sum of items 97, 99, and 103 where:

omit = 0
alternative A = 0
alternative B = 1
alternative C = 2

Item 99 has A and B choices only.

The Work Experience scale was scored by summing items 102, 105, 106, 108, and 109 with item scores defined by:

Item 102

omit = 0

alternative A = 0

alternative B = 1

alternative C = 2

All other items

alternative A = 1

alternative B = 2

alternative C = 3

The Future Plans scale included items 110, 111, 146, 150, 157, and 167 with item scores defined by:

omit = 0

alternative A = 0

alternative B = 1

alternative C = 2

Item 110 has A and B alternatives only.

The Socioeconomic Status scale consisted of items 113, 114, 115, 117, and 118. These items were scored as follows:

omit = 0

Items 113 and 114

alternative A = 0

alternative B = 1

alternative C = 2

alternative D = 3

alternative E = 4

alternative F = 5

alternative G = 6

alternative H = 0

Item 115

alternative A = 3

alternative B = 4

alternative C = 3

alternative D = 1

alternative E = 2

alternative F = 0

alternative G = 2

alternative H = 4

alternative I = 2

Items 117 and 118

alternative A = 0

alternative B = 1

alternative C = 2

alternative D = 3

alternative E = 4

The Non-academic Interest scale was defined as the sum of items 126 through 129, item 133, and items 136 through 139, where items were scored as follows:

omit = 0

alternative A = 0

alternative B = 0

alternative C = 1

alternative D = 2

Items 76, 78, 80, 81, 82, 91, 92, and 96 defined the Reading Habits scale and all items were scored:

omit = 0

alternative A = 0

alternative B = 1

alternative C = 2

The Parental Encouragement scale included items 119 through 122, 124, and 170 with items scored:

omit = 0

alternative A = 4

alternative B = 3

alternative C = 2

alternative D = 1

alternative E = 0

Finally, the Mechanical Knowledge scale consisted of the sum of items 22, 26 through 29, 77 and 87, scored:

omit = 0

alternative A = 0

alternative B = 1

alternative C = 2

A copy of the form of the BEQ used in the present study is included in the following pages.

PRINT NAME____ ANSWER SHEET NUMBER_ _ _ _ _
(Last) (First) (Middle Initial)

COLLEGE________________________________ CITY________________

COLLEGE IDENTIFICATION NUMBER ________________

BACKGROUND AND EXPERIENCE QUESTIONNAIRE

This booklet contains questions about some of your activities during the past two years. The purpose of the questions is to find out if the things you have done outside the classroom affect what you learn inside the classroom.

Your answers will not be graded and will not affect your college standing. However, they will be analyzed for scientific purposes by Educational Testing Service and the results may be used to help other students. Therefore, it is important that you answer every question as accurately as you can.

Write your name, answer sheet number, college, city, and college identification number at the top of this page. Be sure these pieces of information are identical to those you fill out on your answer sheet. Pay special attention to the accuracy of your number above. It is the way the answers you write in your test booklet will be matched to the answers you mark on your answer sheet.

Here are the things to keep in mind when you fill out this questionnaire:

1. Answer the questions in terms of what you have actually done during grades 11 and 12.
2. Answer each question as accurately as you can.
3. Answer every question (unless you are specifically told to skip).
4. Do not count things you have done as part of your school assignments.
5. Some of the questions have blanks in the test booklet and stars (*) after some of the choices. If the answer you mark has a star, be sure to fill in the blank.
6. Mark all of your choices - A, B, C, etc. - on the answer sheet. Put all of your write-in answers in the test booklet.

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1. Sex (Mark A or B on your answer sheet.)

   A Male
   B Female

2. What grade are you now in?

   A Entering Freshman
   B Transfer Student

3. What grade were you in last year?

   A 12
   B College Freshman
   C Non-student

4. Have you changed your home address since October 1963?

   A No
   B Yes

5. Have you changed schools since October 1963?

   A No
   B Yes

How much time each week, on the average, have you spent watching each of the following kinds of TELEVISION programs - during grades 11 and 12? Do not include programs that were part of your school work. Do not include TV watching during school vacations.

6. Detective stories or mysteries

   A Very little or none
   B About 30 minutes a week
   C Between 30 and 60 minutes a week
   D Over 60 minutes a week

7. Western and adventure stories

   A Very little or none
   B About 30 minutes a week
   C Between 30 and 60 minutes a week
   D Over 60 minutes a week

8. Variety programs (for example, Ed Sullivan)

   A Very little or none
   B About 30 minutes a week
   C Between 30 and 60 minutes a week
   D Over 60 minutes a week

9. Comedy

   A Very little or none
   B About 30 minutes a week
   C Between 30 and 60 minutes a week
   D Over 60 minutes a week

10. Teen-age music and dancing

    A Very little or none
    B About 30 minutes a week
    C Between 30 and 60 minutes a week
    D Over 60 minutes a week

11. Serious drama, music, or "specials"

    A Very little or none
    B About 30 minutes a week
    C Between 30 and 60 minutes a week
    D Over 60 minutes a week

12. Documentaries or coverage of special events

    A Very little or none
    B About 30 minutes a week
    C Between 30 and 60 minutes a week
    D Over 60 minutes a week

13. Educational courses, programs, or talks

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

14. Quiz, panel, or audience participation shows

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

15. Cartoons

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

16. Movie features

A Very little or none
B Sometimes, but less than one a week
C About one a week
D Two or more a week

17. Sports events

A Very little or none
B Sometimes, but less than one a week
C About one a week
D Two or more a week

18. How much time each week, on the average, have you spent listening to news reports on RADIO or TV?

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

How much time each week, on the average, have you spent listening to each of the following kinds of RADIO programs or phonograph RECORDS - during grades 11 and 12?

19. Popular music

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

20. Classical or serious music

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

21. During school vacations, how much do you watch TV and listen to the radio or records?

A Less than during school terms
B About the same as during school terms
C More than during school terms

During grades 11 and 12, how much time, on the average, have you spent on each of the following? Mark A, B, or C on your answer sheet.

If you answer a starred (*) choice, fill in the blank in this test book.

Do not count things you did as part of your class assignments.

22. Repairing mechanical things, such as appliances, cars

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Name one________________________

23. Sewing, embroidering, knitting

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Name one piece________________

24. Experimenting with new recipes

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

25. Working on collections, such as rocks, stamps

A. None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*What do you collect? ____________

26. Building electronic equipment or performing scientific experiments at home

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Name one________________

27. Model building; for example, airplanes

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*What kind?________________

28. Refinishing or building things at home (woodwork, etc.)

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Name one thing________________

29. Taking or developing pictures

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

30. Painting, drawing, or sculpturing

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Name one subject________________

31. Practicing, arranging, or composing music

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*What instrument or style? __________

32. Writing poetry, plays, essays, or stories

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Give one title________________

33. Writing letters to friends or relatives

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

34. Taking care of younger brothers or sisters

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

35. Cleaning house

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

36. Cooking for the family

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

37. Riding around on a bicycle

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

38. Riding around on a motorcycle

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

39. Playing individual sports, such as bowling, pool, or swimming

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

40. Practicing sports on your own

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*What?__________________________

41. Hunting, fishing, hiking, or camping

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

42. Playing outdoor group sports (not on a regular team)

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

43. Playing indoor table or card games

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

During grades 11 and 12, how often, on the average, have you done each of the following?

If you answer a starred (*) choice, fill in the blank.

44. Attended club meetings

A Less than once a month
B Between once a week and once a month*
C Once a week or more often*

*Name one club________________________

45. Attended church social meetings

A Less than once a month
B Between once a week and once a month
C Once a week or more often

46. Attended athletic events

A Less than once a month
B Between once a week and once a month
C Once a week or more often

47. Attended movies

A Less than once a month
B Between once a week and once a month
C Once a week or more often

48. Gone roller or ice skating

A Less than once a month
B Between once a week and once a month
C Once a week or more often

49. Attended dances

A Less than once a month
B Between once a week and once a month
C Once a week or more often

50. Gone on dates

A Less than once a month
B Between once a week and once a month
C Once a week or more often

How much time, on the average, have you spent on each of the following?

51. Riding around in cars

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

52. Hanging around, just loafing, talking, or snacking with friends

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

53. Doing personal shopping

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

54. Going window shopping or just looking in stores

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

55. Going to the store for the family

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

56. Taking care of your hair (washing, combing, setting, etc.)

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

57. Other personal grooming (complexion, nails, etc.)

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

58. Taking care of your clothes

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

59. How long, on the average, have you spent talking on the telephone to friends each day?

A Less than 10 minutes a day
B Between 10 and 30 minutes a day
C Over 30 minutes a day

During grades 11 and 12, how many times have you done each of the following?

If you answer a starred (*) choice, fill in the blank in this test book.

Do not count things you did as part of your class assignments.

60. Gone to plays, lectures, concerts, etc., outside of school

A None
B 1 or 2 times*
C More than 2 times*
*Name one________________________

61. Acted in plays, done play production work, or participated in public debates

A None
B 1 or 2 times*
C More than 2 times*

*Name one play or debate topic

____

62. Made solo musical performances or public speeches

A None
B 1 or 2 times*
C More than 2 times*

*Name one occasion____________________

63. Served as a counselor or leader for young children

A None
B 1 or 2 times*
C More than 2 times*

*Name one occasion____________________

During grades 11 and 12, have you been a member of a musical organization - either in or out of school?

64. Band, orchestra, or other instrumental group

A No
B 1 year*
C 2 years*

*What did you do?____________________

65. Chorus, glee club, or other vocal group

A No
B 1 year*
C 2 years*

*What part?____________________

During grades 11 and 12, have you played on athletic teams - either in or out of school?

66. Football

A No
B 1 year*
C 2 years*

*What position?____________________

67. Basketball

A No
B 1 year*
C 2 years*

*What position?____________________

68. Baseball

A No
B 1 year*
C 2 years*

*What position?____________________

69. Track

A No
B 1 year*
C 2 years*

*What event?____________________

70. Other athletic team

A No
B 1 year*
C 2 years*

*Name____________________

71. During grades 11 and 12, have you been a member of a cheering or pep squad?

A No
B 1 year
C 2 years

72. During grades 11 and 12, how many school or class committees have you worked on?

A None
B 1 or 2*
C More than 2*

*What kind?____________________

During grades 11 and 12, have you worked on a newspaper, yearbook, or other publication?

73. Newspaper

A No
B 1 year*
C 2 years*

*What job?____________________

74. Yearbook

A No
B 1 year*
C 2 years*

*What job?____________________

75. Other publication

A No
B 1 year*
C 2 years*

*What?____________________

How many BOOKS of the following kinds have you read during the last two years? Do not include class assignments.

76. History, current events, biography, autobiography

A None
B 1 or 2*
C More than 2*

*Name one title____________________

77. Books telling how to repair, build, or do things

A None
B 1 or 2*
C More than 2*

*Name one title____________________

78. Religious books

A None
B 1 or 2*
C More than 2*

*Name one title____________________

79. Sports, romance, mystery, adventure

A None
B 1 or 2*
C More than 2*

*Name one title____________________

80. Science

A None
B 1 or 2*
C More than 2*

*Name one title____________________

81. Music, art

A None
B 1 or 2*
C More than 2*

*Name one title____________________

82. Classical or best seller fiction, poetry, drama

A None
B 1 or 2*
C More than 2*

*Name one title____________________

How often, on the average, have you read each of the following kinds of MAGAZINES?

83. Teen-age magazines, such as Seventeen, Boys Life

A Rarely or never
B Occasionally*
C Regularly*

*Name one magazine________________

84. Movie or TV

A Rarely or never
B Occasionally*
C Regularly*

*Name one magazine________________

85. Detective, sports, romance, adventure, mystery, western stories

A Rarely or never
B Occasionally*
C Regularly*

*Name one magazine________________

86. Comic books

A Rarely or never
B Occasionally*
C Regularly*

*Name one____________________

87. Hot rod, mechanical, science fiction

A Rarely or never
B Occasionally*
C Regularly*

*Name one____________________

88. Outdoor or sports, such as Sports Illustrated

A Rarely or never
B Occasionally*
C Regularly*

*Name one____________________

89. Men's or women's magazines, home and garden, fashion

A Rarely or never
B Occasionally*
C Regularly*

*Name one____________________

90. News, digest, and general magazines, such as Reader's Digest, Life, Look, Newsweek, Saturday Evening Post

A Rarely or never
B Occasionally*
C Regularly*

*Name one____________________

91. Scientific magazines, such as National Geographic

A Rarely or never
B Occasionally*
C Regularly*

*Name one____________________

92. Literary magazines, such as Atlantic Monthly

A Rarely or never
B Occasionally*
C Regularly*

*Name one____________________

How often have you read each of the following sections of a NEWSPAPER?

93. Comics

A Rarely or never
B Occasionally
C Regularly

94. Sports

A Rarely or never
B Occasionally
C Regularly

95. Society, homemaking

A Rarely or never
B Occasionally
C Regularly

96. News, editorials

A Rarely or never
B Occasionally
C Regularly

97. During grades 11 and 12, how long have you usually worked on school assignments during the evening?

A Seldom or never did homework after school
B Some, but less than 1 hour a day
C 1 hour a day or more

98. During the last two summers, did you go to summer school to make up or do remedial work?

A No
B Yes*

*In what?____________________

99. During the last two summers, did you go to summer school to take extra courses?

A No
B Yes*

*In what?____________________

100. During the last two years, have you had private tutoring lessons in any school subjects?

A No
B Yes*

*In what?____________________

101. During the last two years, have you taken regular lessons (individual or group) outside of school - music, dancing, art, sports, etc.?

A No
B Yes*

*In what?____________________

102. During school vacations in the last two years, have you usually had a job?

A No
B Yes, part-time
C Yes, full-time

103. During school vacations in the last two years, how much time, on the average, have you spent reading and studying?

A Very little or none
B Some, but less than 2 hours a week
C 2 hours a week or more

104. Not counting work during vacations, have you worked outside of school during grades 11 and 12? (Don't forget jobs like your own farming, or helping your parents or guardian with their work or business.)

A No (skip to 107)
B Grade 11 only (answer 105)
C Grade 12 only (answer 105)
D Both years (answer 105)

105. During how many months did you work?

A 2 months or less (answer 106)
B Between 2 and 6 months (answer 106)
C 6 months or longer (answer 106)

106. How many hours a week, on the average, did you work?

A 5 hours a week or less*
B Between 5 and 20 hours a week*
C 20 hours a week or more*

*Briefly describe the duties on your most recent job____________

____

____

107. Have you worked for the school or teachers during grades 11 and 12 - with or without pay? Include such things as helping in the cafeteria, library, or office; grading papers; ushering, parking cars at school events; operating movie projectors or other equipment.

A No (skip to 110)
B Grade 11 only (answer 108)
C Grade 12 only (answer 108)
D Both years (answer 108)

108. During how many months did you work for the school or teachers?

A 2 months or less (answer 109)
B Between 2 and 6 months (answer 109)
C 6 months or longer (answer 109)

109. How many hours a week, on the average, did you work for the school or teachers?

A 5 hours a week or less*
B Between 5 and 20 hours a week*
C 20 hours a week or more*

*Briefly describe what you did

____

____

110. During the last two years, have you seriously considered any occupation(s) for your life work?

A No
B Yes*

*What?______________________________

111. Do you have plans for the year after you graduate from junior college?

A Don't plan to graduate (skip to 113)
B Not sure yet (skip to 113)
C Have fairly definite plans (answer 112)

112. Which one of the following best describes them?

A A full-time job or the military service
B A 4-year college
C Technical School
D Full-time housewife
E Other*

*What?________________________

113. How much formal education does your father or male guardian have?

A Grade school
B Some high school
C Graduated from high school
D Some college, junior college, business or trade school (after completing high school)
E Graduated from college
F Some graduate or professional school (e.g., law, medicine)
G Obtained a graduate or professional degree
H Don't know

114. How much formal education does your mother or female guardian have?

A Grade school
B Some high school
C Graduated from high school
D Some college, junior college, business or trade school (after completing high school)
E Graduated from college
F Some graduate or professional school (e.g., law, medicine)
G Obtained a graduate or professional degree
H Don't know

115A. How does your father or male guardian earn his living? Answer on the lines below. Be as specific as you can - for example, operates milling machine, repairs jewelry, sells candy to retail stores, college English teacher. If he is not now working or if he is dead, say what his occupation was.__________________

____

115B. Which of the following occupational groups most nearly describes or is most similar to the occupation of your father or male guardian? If your mother or female guardian is the main support of your family, choose the group that best describes her occupation. Look over all the groups before making your decision.

A Technical - such as draftsman, surveyor, medical or dental technician, nurse, etc.

B Official - such as manufacturer, officer in a large company, banker, government official or inspector, etc.

C Manager - such as sales manager, store manager, office manager, factory supervisor, etc.
Proprietor or owner - such as owner of a small business, wholesaler, retailer, contractor, restaurant owner, etc.

D
- Semi-skilled worker-such as factory machine operator, bus or cab driver, meat cutter, etc.
- Clerical worker-such as bank-teller, bookkeeper, sales clerk, office clerk, mail carrier, messenger, secretary, etc.
- Service worker-such as a barber, beautician, waiter, etc.
- Protective worker-such as policeman, detective, sheriff, fireman, etc.

E Salesman-such as real estate or insurance salesman, factory representative, etc.

F Workman or laborer-such as factory, farm, or mine worker, fisherman, filling station attendant, longshoreman, etc.

G Farm or ranch manager or owner

H Professional-such as accountant, artist, clergyman, dentist, doctor, engineer, lawyer, librarian, scientist, college professor, social worker.

I Skilled worker or foreman - such as baker, carpenter, electrician, enlisted man in the armed forces, mechanic, plumber, plasterer, tailor, foreman in a factory or mine.

116. How many of your friends definitely plan to go to a regular four-year college? (Do not include those going to secretarial or business schools or junior colleges.)

A Almost all (80% or more)
B Most of them (60% to 80%)
C About half (40% to 60%)
D Some of them (20% to 40%)
E Only a few of them (20% or less)

117. How many rooms are there in your home? (Exclude garage, bathrooms, porch, etc. If you live in an apartment, just count the rooms that belong to your immediate family.)

A Three or less
B Four to five
C Six to seven
D Eight to ten
E More than ten

118. How many bathrooms are there in your house or apartment? (Count only those which have a bathtub or shower.)

A None
B One
C Two
D Three
E Four or more

119. How often do your parents encourage you and otherwise show interest in your school work and grades?

A Constantly - deeply interested and encourage me a great deal

B Frequently - interested and give me encouragement

C Sometimes - show occasional interest and encouragement

D Rarely - not particularly interested or encouraging

E Never - not interested or encouraging at all

120. How does your mother feel about your continuing your education beyond high school?

A Strongly favors it
B Moderately favors it
C Neither for nor against it
D Moderately opposed to it
E Strongly opposed to it

121. How does your father feel about your continuing your education beyond high school?

A Strongly favors it
B Moderately favors it
C Neither for nor against it
D Moderately opposed to it
E Strongly opposed to it

122. How often do your parents encourage you and otherwise show interest in your hobbies and interests that you engage in on your own time, outside of school?

A Constantly - deeply interested and encourage me a great deal

B Frequently - interested and give me encouragement

C Sometimes - show occasional interest and encouragement

D Rarely - not particularly interested or encouraging

E Never - not interested or encouraging at all

123. Do you have an encyclopedia at home, e.g., World Book, Britannica, etc.?

A Yes
B No, but my parents have considered buying one
C No

124. How often do your parents encourage you and otherwise show interest in your social activities, such as clubs or organizations in which people work together either for some purpose or just to have fun?

A Constantly - deeply interested and encourage me a great deal

B Frequently - interested and give me encouragement

C Sometimes - show occasional interest and encouragement

D Rarely - not particularly interested or encouraging

E Never - not interested or encouraging at all

125. From the list below, which program of study are you taking in college?

A Transfer program
B Career program
C College discovery program
D Other*
E Undecided

*What?________________________

Here is a list of school courses. In each item, Mark A if you did not take the course(s).

If you did take the course, mark B, C, or D to show whether the course was boring or interesting to you.

126. Athletics and physical education

A Didn't take any of these courses
B Boring
C Undecided
D Interesting

127. Typing

A Didn't take this course
B Boring
C Undecided
D Interesting

128. Business and commercial - bookkeeping, business arithmetic, office machines, etc. (do not include typing)

A Didn't take any of these courses
B Boring
C Undecided
D Interesting

129. Driver's education

A Didn't take this course
B Boring
C Undecided
D Interesting

130. English and literature

A Didn't take any of these courses
B Boring
C Undecided
D Interesting

131. Foreign language - Spanish, French, German, Latin, etc.

A Didn't take any of these courses
B Boring
C Undecided
D Interesting

132. Social studies - history, geography, government, etc.

A Didn't take any of these courses
B Boring
C Undecided
D Interesting

133. Home economics, agriculture, shop, or vocational

A Didn't take any of these courses
B Boring
C Undecided
D Interesting

134. Mathematics - algebra, geometry, trigonometry, etc.

A Didn't take any of these courses
B Boring
C Undecided
D Interesting

135. Science - biology, chemistry, physics, etc.

A Didn't take any of these courses
B Boring
C Undecided
D Interesting

Do you think the following courses will be useful in helping you earn a living?

136. Athletics and physical education

A Didn't take any of these courses
B Not useful
C Undecided
D Useful

137. Typing

A Didn't take this course
B Not useful
C Undecided
D Useful

138. Business and commercial - bookkeeping, business arithmetic, office machines, etc. (do not include typing)

A Didn't take any of these courses
B Not useful
C Undecided
D Useful

139. Driver's education

A Didn't take this course
B Not useful
C Undecided
D Useful

140. English and literature

A Didn't take any of these courses
B Not useful
C Undecided
D Useful

141. Foreign language - Spanish, French, German, Latin, etc.

A Didn't take any of these courses
B Not useful
C Undecided
D Useful

142. Social studies - history, geography, government, etc.

A Didn't take any of these courses
B Not useful
C Undecided
D Useful

143. Home economics, agriculture, shop, or vocational

A Didn't take any of these courses
B Not useful
C Undecided
D Useful

144. Mathematics - algebra, geometry, trigonometry, etc.

A Didn't take any of these courses
B Not useful
C Undecided
D Useful

145. Science - biology, chemistry, physics, etc.

A Didn't take any of these courses
B Not useful
C Undecided
D Useful

Here are some things teen-agers sometimes think and talk about. During the last two years, how often have you thought about each of them?

146. Your educational and vocational plans after high school

A Rarely or never
B Occasionally
C Frequently

147. TV, sports, movies, popular music

A Rarely or never
B Occasionally
C Frequently

148. Personal values - decent behavior, religion, honesty, etc.

A Rarely or never
B Occasionally
C Frequently

149. World unrest; the cold war, threats to the American way of life

A Rarely or never
B Occasionally
C Frequently

How often have you talked about each of the following with your friends?

150. Your educational and vocational plans after high school

A Rarely or never
B Occasionally
C Frequently

151. TV, sports, movies, popular music

A Rarely or never
B Occasionally
C Frequently

152. Personal values - decent behavior, religion, honesty, etc.

A Rarely or never
B Occasionally
C Frequently

153. World unrest; the cold war, threats to the American way of life

A Rarely or never
B Occasionally
C Frequently

154. The news events of the day

A Rarely or never
B Occasionally
C Frequently

155. Science

A Rarely or never
B Occasionally
C Frequently

156. Literature, music, art

A Rarely or never
B Occasionally
C Frequently

How often have you talked about each of the following with your parents?

157. Your educational and vocational plans after high school

A Rarely or never
B Occasionally
C Frequently

158. TV, sports, movies, popular music

A Rarely or never
B Occasionally
C Frequently

159. Personal values - decent behavior, religion, honesty, etc.

A Rarely or never
B Occasionally
C Frequently

160. World unrest; the cold war; threats to the American way of life

A Rarely or never
B Occasionally
C Frequently

161. The news events of the day

A Rarely or never
B Occasionally
C Frequently

162. Science

A Rarely or never
B Occasionally
C Frequently

163. Literature, music, art

A Rarely or never
B Occasionally
C Frequently

How often have you talked with your teachers outside of class about -

164. your educational and vocational plans after high school?

A Rarely or never
B Occasionally
C Frequently

165. TV, sports, movies, popular music?

A Rarely or never
B Occasionally
C Frequently

166. personal values - decent behavior, religion, honesty, etc.?

A Rarely or never
B Occasionally
C Frequently

How many times have you talked with your school counselor about -

167. your educational and vocational plans after high school?

A None
B Once or twice
C Three or more times

168. TV, sports, movies, popular music?

A None
B Once or twice
C Three or more times

169. personal values - decent behavior, religion, honesty, etc.?

A None
B Once or twice
C Three or more times

170. Do your parents reward you for getting good grades by granting extra privileges, making gifts of money, increasing your allowance, or in some other way?

A Always
B Frequently
C Sometimes
D Seldom
E Never

171. Do your parents punish you for getting poor grades by taking away privileges, cutting your allowance, giving extra chores, or in some other way?

A Always
B Frequently
C Sometimes
D Seldom
E Never

How many semesters of each of the following did you take in grades 11 and 12? 1 year = 2 semesters. For example, if you took French for a full year and Spanish for half a year, this should be counted as 3 semesters of foreign language.

172. Foreign languages - French, Spanish, German, Latin, etc.

A 0
B 1 or 2 semesters
C 3 or 4 semesters
D 5 or 6 semesters
E 7 or more semesters

173. Business and commercial - bookkeeping, business arithmetic, office machines, typing, etc.

A 0
B 1 or 2 semesters
C 3 or 4 semesters
D 5 or 6 semesters
E 7 or more semesters

174. Social studies - history, geography, government, etc.

A 0
B 1 or 2 semesters
C 3 or 4 semesters
D 5 or 6 semesters
E 7 or more semesters

175. Home economics, agriculture, shop, or vocational

A 0
B 1 or 2 semesters
C 3 or 4 semesters
D 5 or 6 semesters
E 7 or more semesters

176. Mathematics - algebra, geometry, trigonometry, etc.

A 0
B 1 or 2 semesters
C 3 or 4 semesters
D 5 or 6 semesters
E 7 or more semesters

177. Science - biology, chemistry, physics, etc.

A 0
B 1 or 2 semesters
C 3 or 4 semesters
D 5 or 6 semesters
E 7 or more semesters

APPENDIX B

The Experimental Comparative Prediction Battery

APPENDIX B

The Experimental Comparative Prediction Battery

The Following Directions test of the CPB is a test designed to measure the integration factor originally identified by Guilford and Lacey (1947). The student is presented with a 5 x 5 matrix containing the letters A, B, C, D, and E. All five letters appear in each row of the matrix in a unique permutation. The test items consist of a set of increasingly complicated directions for selecting one of the letters in the matrix, for example: "Suppose line 2 was written backwards. What letter would come under B in line 1?" (Length: 15 items, 10 minutes.)

The Paper Folding Test is a visualization test. This test ". . . presents drawings to illustrate two or three successive folds made in a square sheet of paper. The drawing of the folded paper shows where one or two holes are punched in it. The subject is to select the one of five drawings which correctly shows how the sheet would appear when fully opened" (French, 1964a, p. 6). (Length: 40 items, 35 minutes.)

The Year 2000 test is similar to the Following Directions test in that the student is required to follow a set of directions of increasing complexity in a clerical task. The directions indicate dates through which the student is to place an "X" in a calendar of the year 2000. (Length: 20 items, 10 minutes.)

A measure of spatial orientation is provided by the Similar Figures test. The task required by this test is to select one of four black and white patterns which cannot result from a simple rotation of the others in two dimensions. (Length: 24 items, 2 minutes for each of two parts.)

The Arithmetic Speed Test requires the ability to perform simple arithmetic operations rapidly which has generally been identified as number facility in factor analytic studies. (Length: 60 items, 3 minutes for each of two parts.)

The last test of the CPB which was used in the present study was the Sentence Completion Test. This is a test of meaningful memory. Students are asked to study a set of 70 unconnected 4 to 8 word sentences for 10 minutes. Following the 10 minutes of study students are given the Arithmetic Speed and Similar Figures tests. They are then presented with the same sentences in random order and asked to fill in an important word that is missing from each sentence. (Length: 70 items, 10 minutes for study and 10 minutes for recall.)

APPENDIX C

The End of Term Questionnaire

APPENDIX C

The End of Term Questionnaire

Two part scores were obtained from the end of term questionnaire. The first part score consisted of the sum of the first 12 item scores and the second part score was the sum of item scores 13 through 24. Favorable items (items 1, 2, 5, 6, 11, 12, 13, 14, 15, 17, 20, 21, and 24) were scored as follows:

strongly disagree = 1
disagree = 2
hard to say or no opinion = 3
agree = 4
strongly agree = 5

The remaining items (items 3, 4, 7, 8, 9, 10, 16, 18, 19, 22, and 23) were scored as follows:

strongly disagree = 5
disagree = 4
hard to say or no opinion = 3
agree = 2
strongly agree = 1

Your Name ____________________

____________________ Today's Date

STUDENT OPINION QUESTIONNAIRE

Instructions: This questionnaire contains statements you may use to report your opinions concerning the college you are attending and the program or courses you are taking, as well as your plans for next term. Your answers are for research purposes only; the questionnaire will be transmitted directly to research staff at Educational Testing Service, and no faculty or staff of this college will see your completed questionnaire. The answers you give can not affect your grades or status in any way.

In the column at the right of each statement, indicate how well that statement expresses your own reaction (how true this is for you) by placing an "X" through the one alternative which most nearly represents your feeling. Be sure to answer all questions.

SD Strongly disagree (this is not at all true for me)
D Disagree
? Hard to say or no opinion
A Agree
SA Strongly agree (this is very true for me)

1.	If I could start over, I would still choose this college.	SD	D	?	A	SA
2.	Most student regulations here (concerning such things as class attendance and student conduct) are reasonable.	SD	D	?	A	SA
3.	I would like more opportunity than I have had to get to know other students.	SD	D	?	A	SA
4.	I would like more opportunity than I have had to talk privately with my instructors.	SD	D	?	A	SA
5.	The instructional facilities (laboratories, library, etc.) are quite satisfactory for my needs.	SD	D	?	A	SA
6.	Most of my teachers here have been excellent.	SD	D	?	A	SA
7.	I feel the need for more vocational counseling and guidance.	SD	D	?	A	SA
8.	If I could, I would transfer to a different type of college.	SD	D	?	A	SA
9.	I now believe that coming here was a great mistake.	SD	D	?	A	SA
10.	I spend as little time around the college as possible.	SD	D	?	A	SA
11.	Opportunities for involvement in extra-curricular activities (athletics, parties, student clubs, etc.) are quite adequate here.	SD	D	?	A	SA
12.	This college is ideal for my needs and purposes.	SD	D	?	A	SA

(Now complete the items on the back of this page.)

13. I am really looking forward to later courses in my program here. SD D ? A SA

14. I think that most of what was taught in my courses so far will be very useful later on. SD D ? A SA

15. If I had it to do over, I would choose the same program (at this or another college). SD D ? A SA

16. Much of my course work has been nothing more than "busy work." SD D ? A SA

17. My program promises to give me a good preparation for what I want to do after college. SD D ? A SA

18. I feel I have learned very little in my courses here so far. SD D ? A SA

19. I find it difficult to study as much as I should. SD D ? A SA

20. Several of my courses have interested me so much that I have done more than the assigned reading or work. SD D ? A SA

21. I am a happier person than I was a year ago. SD D ? A SA

22. I have become more uncertain about my educational or vocational plans. SD D ? A SA

23. Other interests (e.g., sports, or work) prevent me from obtaining an excellent rating or mark for effort in school work. SD D ? A SA

24. Time seems to pass quickly when I'm in class or working on my assignments. SD D ? A SA

25. (In the final question, complete the statement below by checking the alternative which best expresses your plans.)
Next semester, I plan to:

___ A. Continue school full time at this college in the same program.
___ B. Continue school full time at this college but in a different program.
___ C. Attend school part time at this college.
___ D. Go to another school (if so, what school?________________________)
___ E. Quit school temporarily.
___ F. Quit school indefinately.
___ G. Other (What?____)

(When you finish, seal your questionnaire in the envelope provided.)

APPENDIX D

Correlation Matrices: Career Programs

Table D-1

Correlation Matrices
Combined Career Programs: Above Diagonal (N = 250)
Business Programs: Below Diagonal (N = 89)
(Decimal points omitted)

	SAT		HSA	BEQ									CPB						AIM												PVI		Criteria	
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1. SAT-V		48	20	-10	10	08	-01	19	-26	30	-10	-04	45	33	46	16	05	30	02	10	04	-11	-01	-21	01	05	-06	02	00	-15	-01	-11	35	13
2. SAT-M	47		-15	03	04	08	-02	24	-27	09	-09	18	58	60	53	49	25	28	00	-16	01	22	-12	-20	19	-21	-14	30	-22	-15	-16	-26	20	15
3. High School Average	33	-01		-08	-05	-06	08	-11	11	03	01	-40	-04	-04	-01	-13	05	16	10	16	08	02	-01	07	-17	26	02	-36	32	-04	34	32	33	11
4. TV Viewing	-12	-10	-09		-08	-08	04	-04	07	-11	12	17	05	05	04	08	02	-08	-18	-25	-07	-02	-12	10	-04	-22	-13	13	-19	06	-13	21	-08	-01
5. Study Habits	03	03	00	-05		02	13	02	-01	31	08	08	06	-03	08	07	08	03	04	13	07	03	11	06	04	06	03	00	06	-02	24	09	17	11
6. Work Experience	00	14	02	02	08		14	02	-01	18	02	20	07	04	10	02	00	06	12	01	04	01	-01	-01	08	-01	04	09	04	02	-04	-04	-08	-12
7. Future Plans	-13	-06	15	02	11	10		06	04	17	39	-10	10	02	11	-03	04	07	08	11	08	02	08	02	-04	14	05	-07	19	-03	11	13	03	-04
8. Socioeconom. Status	17	24	-21	-22	-03	07	-20		-21	18	20	06	23	14	16	06	13	06	05	03	08	-09	-10	-14	05	-08	07	05	-08	-11	-14	-16	00	-04
9. Nonacad. Interest	-37	-41	18	15	-02	10	01	-33		-09	10	-14	-34	-21	-19	-12	-06	11	-05	18	-01	02	24	44	-06	15	10	-03	13	-30	18	14	-02	-07
10. Reading Habits	09	09	-01	-15	25	10	16	21	-10		02	09	18	12	14	05	03	08	18	21	18	00	27	-15	20	11	09	05	08	-09	21	11	07	13
11. Parental Encour.	-24	-08	-09	-02	00	05	30	13	-01	12		-03	05	-24	-04	-14	00	02	05	-03	-06	-07	03	15	-12	-02	00	-07	12	09	-02	01	-07	07
12. Mech. Knowledge	-26	-04	-27	09	05	13	06	03	-10	09	12		14	20	06	25	04	-15	00	-22	03	18	00	-07	38	-28	-04	52	-32	05	-10	-23	20	-08
13. Following Dir.	47	65	07	-04	01	-03	11	22	-43	11	-03	00		47	57	31	25	22	-02	-14	-02	07	-17	-23	08	-23	-20	13	-10	-21	-20	-22	21	17
14. Paper Folding	28	51	24	-02	-13	06	10	04	-07	06	-17	03	48		40	49	04	18	-08	-21	09	19	-18	-25	19	-20	-12	28	-21	-27	-14	-15	17	19
15. Year 2000	33	46	01	00	26	11	12	18	-14	11	-06	-07	45	37		26	29	34	-10	-16	-06	-03	-05	-08	-01	-22	-24	05	-08	-13	-17	-17	39	26
16. Similar Figures	19	33	19	03	-01	-10	11	-17	-06	09	-10	-16	32	49	28		20	08	-18	-18	01	23	-14	-05	17	-31	-14	30	-24	-08	-09	-06	06	06
17. Arithmetic Speed	-06	17	07	12	10	07	14	06	-05	-11	09	01	15	01	25	20		15	-07	-11	-16	12	-09	09	-09	-04	-09	-05	-08	05	-02	-12	18	08
18. Sentence Completion	21	22	26	-19	-07	11	-01	04	15	02	02	-18	19	30	34	11	-06		01	04	05	-12	04	00	-07	-02	-02	-03	13	-03	08	-01	25	10
19. Biology	-06	02	-04	-22	04	24	01	08	07	11	04	06	-02	-08	-13	-12	-08	00		01	09	22	05	-22	50	28	25	07	34	-18	16	15	-12	-08
20. English	09	-13	19	-11	18	04	05	-09	10	17	-05	-16	-11	-25	-15	-23	-18	08	00		36	01	44	17	00	49	43	-10	36	27	27	16	11	00
21. Fine Arts	06	-05	10	-01	16	08	10	00	04	32	03	09	00	08	-12	11	-28	06	-05	36		04	11	-03	15	17	30	25	22	04	12	07	11	10
22. Mathematics	-12	12	16	02	11	10	18	-12	19	10	06	07	05	04	00	13	24	-12	32	01	-02		07	14	52	-01	08	35	06	23	20	06	00	-11
23. Social Sciences	-11	-17	06	-02	13	07	12	-11	22	25	08	06	-15	-17	-05	-07	-22	00	06	46	11	14		22	12	24	24	07	22	47	23	17	06	05
24. Secretarial	-21	-25	29	06	07	04	27	-23	42	-06	18	-10	-24	-12	-05	-06	03	18	-02	22	-05	36	26		-13	06	04	03	19	72	08	05	00	-06
25. Physical Sciences	-10	13	-11	-13	05	05	06	12	02	29	11	22	04	00	-12	04	-14	-12	59	05	16	44	22	02		01	25	65	03	08	11	-08	-17	-10
26. Foreign Languages	05	-08	23	-13	08	-08	11	-09	21	-06	-18	-20	-12	-08	-26	-24	-09	-06	31	41	02	16	17	28	09		36	-16	40	08	20	13	03	-04
27. Music	-08	-11	04	06	-07	09	05	03	15	10	22	01	-13	-13	-35	-10	-14	-04	22	40	15	06	25	07	24	26		17	32	20	17	09	-09	-13
28. Engineering	-08	22	-23	12	-03	12	10	04	03	21	20	30	13	14	01	04	-20	-03	16	-13	29	19	12	-01	61	-12	14		-17	26	-08	-30	-17	-09
29. Home Economics	04	-11	30	-03	23	01	22	-13	24	03	08	-16	-04	-03	05	06	03	17	23	35	20	28	20	51	13	41	25	-08		17	28	36	13	10
30. Executive	-10	-16	18	07	-08	06	22	-04	18	-00	20	-01	-07	-17	-20	-14	-02	-01	-07	38	06	33	51	65	15	27	26	18	34		12	-02	-01	-09
31. Persistence	03	-23	25	-17	25	10	20	-12	22	17	-06	-06	-26	-09	-03	-03	00	00	04	33	15	22	28	26	06	24	20	-12	32	23		47	23	01
32. Self-control	01	-23	30	07	15	01	16	-35	20	10	02	-09	-13	-03	-06	15	-16	04	03	21	25	14	31	20	-03	13	13	-19	50	20	45		18	04
33. Grade Point Average	39	20	38	-13	31	-01	-03	-02	00	-02	-10	-16	19	15	42	14	14	21	-19	20	01	14	07	14	-16	06	-18	-19	28	08	37	28		46
34. Term 2 Status	05	07	03	-14	21	-15	09	-06	04	22	04	06	04	15	23	-04	02	17	-15	15	04	01	20	15	-02	04	-12	02	16	08	24	20	31	

Table D-2

Correlation Matrices
Nursing Program: Above Diagonal (N = 97)
Technologies Programs: Below Diagonal (N = 64)
(Decimal points omitted)

	SAT		HSA	BEQ									CPB						AIM												PVI		Criteria	
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1. SAT-V		56	18	-13	13	06	12	20	-19	42	00	08	45	39	54	14	40	45	12	08	11	-16	07	-31	05	14	05	08	-03	-25	02	-24	57	28
2. SAT-M	35		05	-09	01	14	18	19	-11	16	10	-03	54	57	58	34	37	40	15	-10	13	14	-04	-21	04	-08	-20	08	-02	-21	-12	-16	43	30
3. High School Average	24	-13		15	-06	-09	-06	-08	01	06	10	04	01	08	02	09	14	08	04	-14	-06	14	-09	01	05	06	-13	-07	-10	-04	39	25	27	07
4. TV Viewing	-16	10	-15		-12	-05	25	03	03	-09	18	13	-04	02	-02	-07	-15	-05	03	-19	-02	-07	-22	00	02	-08	-15	00	-10	-10	-15	-06	-06	03
5. Study Habits	15	17	-13	-08		09	15	05	-05	33	08	18	08	01	05	04	11	09	17	16	07	-13	07	-07	03	18	15	01	-06	-06	15	00	15	07
6. Work Experience	23	-06	-13	-20	-14		28	-05	01	26	05	28	15	04	08	13	-03	11	22	-07	09	-02	04	-03	08	03	02	14	08	03	-06	-06	02	-05
7. Future Plans	09	07	-06	-04	13	02		24	08	17	47	04	19	06	24	13	09	14	25	-06	-06	-15	00	-21	-06	00	-13	-02	07	-21	-03	08	10	-01
8. Socioeconom. Status	16	29	03	-03	07	05	17		-10	25	24	01	24	23	15	17	30	13	-08	13	13	-24	-07	-14	-11	-05	01	-05	00	-24	-20	-08	12	08
9. Nonacad. Interest	-15	-11	-15	04	-04	-17	-03	-16		-07	17	04	-17	-21	-23	-18	-13	07	29	28	-05	09	20	35	25	16	21	11	14	20	24	12	-20	-27
10. Reading Habits	40	-06	11	-10	36	13	20	-01	-01		-02	33	28	21	24	04	20	20	16	28	18	-16	33	-26	14	29	13	04	-01	-11	25	10	28	15
11. Parental Encour.	00	-13	-17	24	14	-04	35	32	-10	05		00	15	-16	02	01	13	13	25	-18	-09	-05	-16	03	-03	-03	-17	-06	14	-11	02	02	-04	-08
12. Mech. Knowledge	-08	-01	-47	12	11	30	-09	03	-04	-04	07		04	-05	11	-02	-05	-05	21	15	21	06	12	06	31	18	21	36	03	16	08	-01	02	-10
13. Following Dir.	39	41	05	20	14	04	15	16	-30	04	20	04		39	69	26	53	33	-04	01	04	-04	-05	-08	-09	-19	-15	-04	05	-16	-18	-20	42	31
14. Paper Folding	20	48	-09	00	08	02	19	-03	05	-04	-20	03	37		47	34	13	24	-05	-13	18	05	-16	-22	-03	-23	-17	-01	-15	-35	-10	-04	40	38
15. Year 2000	49	32	26	-04	-08	16	11	08	-22	-06	01	-22	37	09		23	44	41	08	-11	11	-01	04	-16	03	-07	-10	05	15	-17	-18	-17	53	34
16. Similar Figures	05	52	-15	-05	19	09	03	13	-01	04	-09	15	22	39	-01		14	23	-07	-05	17	06	-25	-18	-02	-21	-20	09	-02	-33	-08	-11	12	09
17. Arithmetic Speed	-27	19	00	01	00	00	-06	-05	-13	-01	-28	06	-01	-07	00	21		33	-03	-05	-09	01	-09	01	-10	11	-01	-06	00	-10	-02	-06	30	05
18. Sentence Completion	20	32	09	-03	03	-08	07	-05	07	-05	-20	-22	15	09	26	05	16		21	-09	03	-12	04	-17	05	-02	-05	00	13	-20	12	-13	39	07
19. Biology	03	-18	40	-21	01	-13	-12	16	-20	24	-01	-14	-19	-43	-20	-22	15	-15		-09	04	15	17	05	52	06	11	29	34	12	22	11	11	-00
20. English	28	06	20	-39	03	10	25	15	-02	22	01	-26	-22	05	-07	06	-03	17	14		29	03	47	16	15	37	42	15	19	31	19	-07	-02	-16
21. Fine Arts	-06	-05	15	-16	00	-10	19	12	-03	-01	-15	-05	-12	06	-27	-10	-04	07	28	47		04	17	-01	16	19	32	45	09	09	-02	-13	22	14
22. Mathematics	-17	21	-06	-10	21	-08	15	18	-11	10	-11	16	00	31	-42	29	12	-08	14	22	17		05	31	49	-19	10	36	13	44	24	09	-05	-14
23. Social Sciences	05	-03	-16	-08	10	-13	09	-11	21	26	10	04	-29	-07	-17	-08	03	06	08	36	03	13		16	20	30	33	13	32	43	29	14	17	00
24. Secretarial	-13	-11	-27	11	14	06	10	03	23	06	14	03	-33	-21	-15	02	03	-06	02	10	05	02	16		20	-02	11	18	18	66	07	03	-28	-30
25. Physical Sciences	-08	-03	-11	-17	17	10	03	11	-01	16	-22	34	-08	10	-32	07	09	-10	30	10	23	53	23	-05		10	36	67	35	43	28	04	04	-08
26. Foreign Languages	06	-24	28	-29	-06	-01	15	-08	09	12	03	-34	-33	-12	-19	-17	02	-01	30	63	29	11	28	16	-01		38	10	19	11	21	02	05	-16
27. Music	-11	01	05	-18	03	-01	17	23	04	-01	04	-11	-39	-04	-23	-03	00	08	24	49	47	12	20	27	15	36		41	32	42	15	-04	10	-10
28. Engineering	-14	14	-46	07	05	04	-03	09	15	-15	-07	51	-03	29	-42	19	01	01	-19	02	16	36	16	19	51	-11	16		26	40	10	-05	08	-09
29. Home Economics	17	-04	31	-18	-01	03	01	-06	-09	23	01	-21	-05	-10	-05	-07	-12	14	37	34	36	03	21	30	06	24	33	-02		35	09	03	04	-05
30. Executive	-11	-07	-37	06	-05	04	00	09	23	-03	12	18	-36	-16	-23	-05	06	08	06	19	05	18	53	59	31	12	28	51	32		23	05	-12	-24
31. Persistence	-04	18	16	04	27	-20	04	00	-04	23	-17	-05	-03	-01	-25	07	02	15	23	19	28	31	03	-08	24	02	09	-01	26	-04		54	11	-21
32. Self-control	01	-04	19	-35	15	-09	-08	04	-03	16	-17	-16	-18	-10	-02	24	-01	08	19	14	-01	16	-02	05	-01	-07	02	-35	07	-20	30		00	-15
33. Grade Point Average	14	18	30	-14	03	-23	03	-06	-19	-01	-21	-28	22	27	30	06	06	11	05	09	15	04	-15	-33	-13	01	-07	-31	11	-36	18	27		48
34. Term 2 Status	07	09	24	01	05	-16	-23	-22	-08	03	-21	-18	17	11	13	16	14	06	04	03	13	-18	-09	-18	-12	-01	13	-21	25	-25	05	10	57	

APPENDIX E

Correlation Matrices: Transfer Programs

Table E-1

Correlation Matrices

Combined Transfer Programs: Above Diagonal (N = 379)
Engineering Science Program: Below Diagonal (N = 57)
(Decimal points omitted)

	SAT		HSA	BEQ									CPB						AIM												PVI		Criteria	
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1. SAT-V		00	-36	-13	03	00	-05	-04	-13	19	-13	05	22	08	22	02	-09	01	-08	19	09	-23	11	-11	-03	04	05	-02	-03	-09	-20	-01	-14	-03
2. SAT-M	15		-48	17	-13	12	-04	05	-10	-05	00	28	36	51	29	45	11	-11	04	-22	-08	40	-12	-01	29	-36	-06	36	-21	05	-11	-25	-06	-11
3. High School Average	-40	-53		00	03	-08	04	-11	08	-13	07	-13	-29	-29	-25	-23	02	14	00	06	02	-08	-05	09	-16	16	05	-20	18	-03	21	14	19	10
4. TV Viewing	-20	01	22		-19	-07	-05	-08	09	-17	11	05	06	07	00	18	07	-12	-03	-22	-20	16	-06	07	09	-21	-17	13	-21	09	-03	-13	-12	-04
5. Study Habits	-02	00	-08	-14		04	22	-03	-03	30	02	-04	-05	-03	-02	-14	-13	12	10	25	09	02	19	04	04	24	16	-12	15	07	28	27	11	10
6. Work Experience	09	18	-18	-08	07		11	00	11	13	05	06	08	12	07	10	00	06	04	09	03	-03	-04	02	-01	01	11	02	03	-05	-05	-16	-04	01
7. Future Plans	-18	-21	13	15	11	-09		01	14	19	26	12	-02	03	07	00	-09	08	15	10	08	12	09	11	10	18	15	06	16	05	22	10	03	02
8. Socioeconom. Status	12	10	-20	03	-07	-03	13		02	09	17	05	08	-02	08	-04	01	-09	-05	02	11	06	-12	-01	-02	-12	07	01	-01	-02	-16	-05	-06	05
9. Nonacad. Interest	03	-08	-05	17	01	14	13	-10		00	13	-03	-03	-02	-04	00	-04	06	02	09	15	02	-05	34	-05	09	16	00	37	20	15	14	-08	-06
10. Reading Habits	41	18	-25	-13	38	17	12	-14	03		03	13	01	00	07	02	-09	-05	20	31	20	-03	30	-05	09	23	34	-04	12	01	11	12	-01	-02
11. Parental Encour.	-17	10	08	29	-03	-08	19	03	07	-07		-03	03	-02	06	01	05	-02	-06	01	05	04	-04	16	-09	-01	06	-03	10	07	00	02	-07	-04
12. Mech. Knowledge	43	13	-17	-24	04	08	12	04	-02	37	-14		04	32	01	26	-10	-13	17	-22	08	32	-14	-05	47	-20	04	59	-11	04	12	-17	-11	-01
13. Following Dir.	26	43	-34	-04	14	13	-07	-08	02	16	11	20		22	39	24	-13	04	-14	-01	-04	04	-05	00	-04	-13	-12	04	-15	01	-18	-17	-06	-03
14. Paper Folding	38	45	-30	-21	-08	11	-19	17	06	32	-20	36	17		24	39	-15	00	06	-12	18	27	-13	03	24	-20	09	42	-02	06	-07	-17	-14	-06
15. Year 2000	13	30	-15	09	-01	15	09	-04	-02	15	14	23	15	25		16	-09	07	-09	02	-02	05	-04	08	-04	-14	00	-01	-08	00	-13	-10	-11	-12
16. Similar Figures	12	46	-21	04	08	26	-09	03	-03	12	-05	15	30	49	16		12	-08	09	-15	03	25	-08	07	19	-16	-04	33	-11	10	-08	-17	-14	-09
17. Arithmetic Speed	-13	13	09	22	-13	08	19	-06	-09	-14	26	-10	14	-27	06	21		-05	-10	-13	-23	11	-02	12	-06	-11	-19	-05	-07	12	-14	-17	03	03
18. Sentence Completion	-05	05	01	19	11	04	05	-13	28	-21	33	-20	02	-14	08	02	27		-04	08	08	-14	-15	09	-18	11	01	-14	19	-08	08	12	08	00
19. Biology	-10	-06	11	09	-14	05	00	12	12	12	-13	04	-19	04	-16	05	-15	-10		-03	08	32	12	05	63	11	21	29	18	15	17	06	10	06
20. English	-01	-19	06	12	22	12	00	-18	23	34	10	-21	-02	-10	-10	03	-06	02	14		39	-13	47	01	-16	53	47	-22	34	08	15	15	14	09
21. Fine Arts	26	-07	-17	-03	08	-04	16	08	18	28	-19	11	00	25	-09	-03	-20	-15	30	31		09	05	15	03	32	50	23	48	11	06	11	-02	03
22. Mathematics	-19	-14	19	15	04	-05	19	-10	15	18	16	-01	-17	-28	-17	-24	16	04	34	21	01		02	22	59	-09	08	47	03	32	21	-04	03	02
23. Social Sciences	-06	-23	03	-05	11	04	03	-07	14	16	07	-27	-13	-18	-24	-09	-04	-05	13	59	18	42		04	14	34	20	-06	13	32	15	09	12	07
24. Secretarial	01	00	-02	09	11	15	01	06	17	17	12	17	-05	01	-03	12	11	11	06	40	28	17	30		02	12	07	05	45	63	03	02	05	03
25. Physical Sciences	06	-07	01	-04	04	08	06	16	10	25	-01	22	-07	-02	-25	-19	-11	-11	58	15	20	63	34	13		-08	12	66	-05	24	19	-09	04	03
26. Foreign Languages	-05	-37	17	-22	16	-10	08	-08	04	02	10	-13	-20	-27	-36	-23	03	09	-02	47	20	35	59	28	16		38	-21	39	15	18	22	04	05
27. Music	10	01	08	-05	-06	-04	-07	-10	29	22	-06	03	-13	10	-17	-06	-14	-08	23	51	48	23	44	42	26	52		08	45	11	14	13	07	00
28. Engineering	26	23	-23	05	-28	-04	-03	24	02	21	00	33	07	28	-07	-01	-04	-09	35	03	38	21	05	25	57	-10	27		-01	25	07	-16	-07	02
29. Home Economics	04	-03	-09	07	05	00	-05	-01	35	27	-06	06	04	07	-19	07	-03	-02	34	50	55	35	51	61	38	38	62	44		33	14	24	11	12
30. Executive	06	11	-22	-03	11	18	-13	00	26	25	14	06	07	10	-06	17	01	-02	09	44	35	17	45	72	19	39	50	29	67		09	-01	09	08
31. Persistence	-44	-38	30	-03	23	-24	35	-24	23	-02	07	-05	-21	-27	-28	-25	-15	10	05	19	02	30	23	11	09	42	22	-11	28	07		47	21	09
32. Self-control	-19	-21	16	09	39	-29	34	-14	10	09	12	-12	-05	-28	-09	-11	-14	10	-13	24	-09	02	11	12	-22	28	09	-35	13	02	60		13	10
33. Grade Point Average	-26	-09	04	11	05	-34	04	-01	-34	-04	11	-16	-11	-18	-08	-13	-13	-01	09	12	-06	-01	11	03	01	00	-08	03	04	08	39	33		41
34. Term 2 Status	-04	-03	-04	19	09	-15	-01	26	-21	-04	-07	-15	03	-04	-10	-13	-16	05	-02	-02	-03	-02	01	-10	02	-09	-27	10	-06	-11	18	14	46	

Table E-2

Correlation Matrix
Liberal Arts Program: (N = 277)
(Decimal points omitted)

	SAT		HSA	BEQ									CPB						AIM												PVI		Criteria	
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1. SAT-V																																		
2. SAT-M	-06																																	
3. High School Average	-41	-52																																
4. TV Viewing	-06	14	-06																															
5. Study Habits	08	-10	04	-21																														
6. Work Experience	-05	06	-04	-06	08																													
7. Future Plans	03	-06	02	-12	23	17																												
8. Socioeconom. Status	-04	08	-10	-11	-02	02	01																											
9. Nonacad. Interest	-12	-09	13	04	-05	09	16	04																										
10. Reading Habits	20	-10	-13	-20	29	10	22	15	-03																									
11. Parental Encour.	-10	01	06	12	01	08	28	21	13	04																								
12. Mech. Knowledge	-03	15	-11	-03	00	02	10	10	-04	16	03																							
13. Following Dir.	21	29	-33	07	-09	05	00	17	-03	-07	02	-06																						
14. Paper Folding	08	41	-29	01	03	09	01	-04	-06	-03	01	12	20																					
15. Year 2000	20	23	-28	01	-02	03	05	16	-05	06	04	-11	41	18																				
16. Similar Figures	07	39	-25	11	-16	02	-01	-04	-05	00	01	13	22	24	15																			
17. Arithmetic Speed	-09	13	-01	07	-14	00	-15	01	-02	-08	01	-12	14	-14	12	12																		
18. Sentence Completion	03	-12	13	-16	08	10	09	-08	00	-04	-09	-11	06	05	07	08	-11																	
19. Biology	-08	04	-01	-02	16	02	18	-04	01	21	-05	27	-16	09	-10	13	-10	-04																
20. English	23	-19	00	-24	22	06	14	10	10	28	-04	-13	-02	-07	03	14	-17	03	-10															
21. Fine Arts	05	-13	03	-27	11	03	14	15	17	20	10	04	-07	17	-03	00	-27	10	05	38														
22. Mathematics	-21	39	-09	08	06	-05	06	12	-02	-01	04	24	04	18	04	18	12	-16	36	-07	10													
23. Social Sciences	17	-09	-08	-01	19	-05	12	-13	-09	33	-06	-04	-03	-08	01	-04	-06	-20	08	43	00	01												
24. Secretarial	-11	-04	12	01	03	00	15	-04	35	-08	18	-11	-01	01	13	03	12	09	08	-02	16	24	02											
25. Physical Sciences	-02	25	-18	06	10	-07	08	01	-10	12	-10	42	-07	16	-05	13	-06	-19	67	-14	-02	55	15	02										
26. Foreign Languages	04	-29	12	-16	21	05	25	-14	13	24	-03	-13	-11	-09	-07	-03	-14	07	13	54	35	-01	28	16	-01									
27. Music	04	-07	00	-18	20	08	20	11	14	36	05	08	-15	10	01	-05	-21	-02	22	41	50	12	16	04	14	39								
28. Engineering	-02	24	-20	03	-05	-02	02	03	-03	00	-01	52	01	32	-06	24	-07	-14	36	-16	22	36	-04	03	62	-11	12							
29. Home Economics	-04	-21	23	-24	16	04	22	02	37	09	11	-10	-18	01	-07	-13	-10	19	14	26	50	06	03	49	-09	37	42	00						
30. Executive	-08	03	01	08	09	-13	09	-03	17	00	07	03	02	04	06	06	15	-11	20	08	10	36	34	60	30	18	08	28	32					
31. Persistence	-12	-14	20	-08	30	00	18	-17	12	12	-03	10	-24	-14	-13	-12	-14	05	23	16	04	18	16	01	22	16	12	02	09	09				
32. Self-control	03	-23	13	-17	25	-11	11	-07	14	10	02	-13	-23	-07	-09	-11	-18	08	12	13	17	02	10	02	02	16	18	-06	27	00	49			
33. Grade Point Average	-08	-02	22	-17	11	07	03	-10	-01	-03	-14	-03	-05	-09	-11	-12	05	08	11	11	-01	09	09	05	10	06	10	-02	13	09	20	09		
34. Term 2 Status	00	-16	13	-11	12	03	04	-01	-05	-05	-05	09	-07	-07	-11	-11	05	-02	11	09	03	04	07	03	07	09	03	05	15	11	06	10	40	

APPENDIX F

Stepwise Multiple Correlations

Table F-1

Stepwise Multiple Correlations with GPA:

Combined Career Programs (N=250)

Variables	Standard Regression Weights	Number of Variables	Multiple Correlations
Year 2000	.39	1	.39
Year 2000	.39		
H.S.G.A.	.34	2	.52
Year 2000	.43		
H.S.G.A.	.27		
Persistence	.21	3	.55
Year 2000	.43		
H.S.G.A.	.23		
Persistence	.24		
Physical Sciences	-.15	4	.57
Year 2000	.36		
H.S.G.A.	.20		
Persistence	.24		
Physical Sciences	-.16		
SAT-V	.14	5	.58

Table F-2

Stepwise Multiple Correlations with GPA:

Business Programs (N=89)

Variables	Standard Regression Weights	Number of Variables	Multiple Correlations
Year 2000	.42	1	.42
Year 2000	.43		
Persistence	.38	2	.57
Year 2000	.42		
Persistence	.29		
H.S.G.A.	.28	3	.62
Year 2000	.45		
Persistence	.32		
H.S.G.A.	.29		
Plans	-.20	4	.65
Year 2000	.43		
Persistence	.33		
H.S.G.A.	.29		
Plans	-.19		
Biology	-.13	5	.66

Table F-3

Stepwise Multiple Correlations with GPA: Nursing Program (N=97)

Variables	Standard Regression Weights	Number of Variables	Multiple Correlations
SAT-V	.57	1	.57
SAT-V	.40		
Year 2000	.31	2	.63
SAT-V	.36		
Year 2000	.33		
H.S.G.A.	.20	3	.66
SAT-V	.34		
Year 2000	.32		
H.S.G.A.	.21		
Fine Arts	.15	4	.68
SAT-V	.33		
Year 2000	.32		
H.S.G.A.	.22		
Fine Arts	.13		
Social Sciences	.13	5	.69

Table F-4

Stepwise Multiple Correlations with GPA:

Technologies Programs (N=64)

Variables	Standard Regression Weights	Number of Variables	Multiple Correlations
Executive	-.36	1	.36
Executive	-.44		
Home Economics	.25	2	.43
Executive	-.41		
Home Economics	.26		
Paper Fold.	.23	3	.49
Executive	-.40		
Home Economics	.27		
Paper Fold.	.24		
Work	-.22	4	.53
Executive	-.34		
Home Economics	.26		
Paper Fold.	.22		
Work	-.26		
Year 2000	.26	5	.59

Table F-5

Stepwise Multiple Correlations with GPA:

Combined Transfer Programs (N=379)

Variables	Standard Regression Weights	Number of Variables	Multiple Correlations
Persistence	.21	1	.21
Persistence	.18		
H.S.G.A.	.15	2	.26
Persistence	.19		
H.S.G.A.	.16		
Nonacademic Interest	-.12	3	.28
Persistence	.21		
H.S.G.A.	.14		
Nonacademic Interest	-.12		
Mechanical Knowledge	-.12	4	.31
Persistence	.21		
H.S.G.A.	.15		
Nonacademic Interest	-.15		
Mechanical Knowledge	-.12		
Executive	.11	5	.33

Table F-6

Stepwise Multiple Correlations with GPA: Engineering Science Program (N=57)

Variables	Standard Regression Weights	Number of Variables	Multiple Correlations
Persistence	.39	1	.39
Persistence	.50		
Nonacademic Interest	-.46	2	.60
Persistence	.52		
Nonacademic Interest	-.50		
T.V. Viewing	.22	3	.63
Persistence	.60		
Nonacademic Interest	-.54		
T.V. Viewing	.28		
H.S.G.A.	-.24	4	.67
Persistence	.56		
Nonacademic Interest	-.51		
T.V. Viewing	.26		
H.S.G.A.	-.25		
Work Experience	-.16	5	.68

Table F-7

Stepwise Multiple Correlations with GPA:

Liberal Arts Program (N=277)

Variables	Standard Regression Weights	Number of Variables	Multiple Correlations
H.S.G.A.	.22	1	.22
H.S.G.A.	.21		
T.V. Viewing	-.16	2	.27
H.S.G.A.	.24		
T.V. Viewing	-.16		
Physical Sciences	.15	3	.31
H.S.G.A.	.25		
T.V. Viewing	-.15		
Physical Sciences	.14		
Parental Encouragement	-.12	4	.33
H.S.G.A.	.32		
T.V. Viewing	-.16		
Physical Sciences	.12		
Parental Encouragement	-.13		
SAT-M	.14	5	.35

APPENDIX G

Group Means and Standard Deviations

Table G-1

Group Means ($\overline{X}$) and Standard Deviations (SD)

Variable		Career Programs				Transfer Programs			Sex		Second Semester Status		
		Combined Career Programs	Business Programs	Nursing Program	Technology Programs	Combined Transfer Programs	Liberal Arts Program	Engineering Science Program	Women	Men	Continuing Full Time	Continuing Part Time	Not Continuing
1. SAT-V	$\overline{X}$	398	390	388	397	453	455	448	419	425	423	409	423
	SD	88	90	88	87	69	68	66	90	77	83	89	84
	N	419	120	131	115	475	341	72	471	443	712	118	81
2. SAT-M	$\overline{X}$	416	385	378	463	479	466	538	409	481	446	423	453
	SD	88	76	84	72	74	67	74	78	79	83	98	99
	N	419	120	131	115	475	341	72	471	443	712	118	81
3. High School Average	$\overline{X}$	79.8	80.6	80.7	77.7	78.3	78.4	77.9	80.2	77.5	79.2	78.3	78.5
	SD	4.1	4.4	3.3	4.3	2.8	2.6	3.7	3.6	3.1	3.6	3.5	3.6
	N	396	123	136	85	456	325	70	435	375	619	109	79
4. TV Viewing	$\overline{X}$	12.2	12.1	10.3	12.9	13.0	12.5	14.4	11.3	13.8	12.5	12.9	12.1
	SD	5.3	4.3	5.3	5.6	5.0	5.0	4.8	4.9	5.1	5.1	5.5	5.0
	N	394	113	115	115	449	321	68	435	426	678	106	74
5. Study Habits	$\overline{X}$	3.2	3.3	3.3	3.1	3.2	3.3	3.0	3.5	3.1	3.3	3.2	2.9
	SD	1.0	.9	1.0	1.1	1.1	1.1	1.1	.9	1.2	1.1	1.1	1.1
	N	394	113	115	115	449	321	68	435	426	678	106	74
6. Work Experience	$\overline{X}$	5.6	5.5	5.7	5.7	5.3	5.2	5.8	5.4	5.6	5.4	5.5	6.4
	SD	3.4	3.3	3.3	3.6	3.2	3.1	3.8	3.1	3.5	3.3	3.7	3.0
	N	394	113	115	115	449	321	68	435	426	678	106	74
7. Future Plans	$\overline{X}$	8.6	8.6	9.1	8.3	8.8	8.7	9.2	9.1	8.4	8.8	8.7	8.6
	SD	1.8	1.8	1.6	2.0	1.8	1.9	1.8	1.6	2.0	1.9	1.8	1.8
	N	394	113	115	115	449	321	68	435	426	678	106	74
8. Socioeconom. Status	$\overline{X}$	6.9	6.3	6.8	7.0	7.5	7.5	7.4	7.1	7.0	7.0	7.2	7.1
	SD	3.2	3.0	3.6	3.0	2.9	3.0	2.7	3.2	2.9	3.1	2.9	3.1
	N	394	113	115	115	449	321	68	435	426	678	106	74
9. Nonacad. Interest	$\overline{X}$	8.5	10.5	8.3	7.0	6.5	6.4	6.3	8.4	6.5	7.4	8.1	7.6
	SD	3.9	4.0	3.8	3.2	3.6	3.5	3.6	3.8	3.6	3.8	3.9	4.0
	N	394	113	115	115	449	321	68	435	426	678	106	74
10. Reading	$\overline{X}$	4.6	4.3	5.0	4.5	5.2	5.3	4.8	5.2	4.6	5.0	4.7	4.2
	SD	2.8	2.5	3.1	2.8	2.6	2.7	2.6	2.8	2.6	2.7	2.7	2.4
	N	394	113	115	115	449	321	68	435	426	678	106	74

Table G-1 (continued)

		Career Programs				Transfer Programs			Sex		Second Semester Status		
Variable		Combined Career Programs	Business Programs	Nursing Program	Technology Programs	Combined Transfer Programs	Liberal Arts Program	Engineering Science Program	Women	Men	Continuing Full Time	Continuing Part Time	Not Continuing
11. Parental Encour.	$\overline{X}$	16.6	17.1	16.9	15.7	17.0	17.1	16.9	17.2	16.4	16.7	17.4	16.8
	SD	3.8	3.5	4.0	4.0	3.5	3.7	3.5	3.7	3.7	3.8	3.2	3.3
	N	394	113	115	115	449	321	68	435	426	678	106	74
12. Mech. Knowledge	$\overline{X}$	1.8	1.0	1.0	3.4	1.8	1.0	4.2	.8	2.8	1.7	1.9	2.4
	SD	2.3	1.7	1.4	2.8	2.3	1.7	2.9	1.3	2.6	2.2	2.4	2.7
	N	394	113	115	115	449	321	68	435	426	678	106	74
13. Following Dir.	$\overline{X}$	5.4	4.7	4.9	6.2	6.5	4.7	6.9	5.4	6.3	5.9	5.2	6.0
	SD	3.3	2.9	3.5	3.2	3.0	2.9	3.2	3.2	3.2	3.2	3.1	3.2
	N	425	118	137	119	469	338	71	472	456	722	118	85
14. Paper Folding	$\overline{X}$	18.3	14.9	16.4	23.1	20.6	14.9	27.6	17.1	22.0	19.6	18.2	20.1
	SD	8.6	7.7	8.6	7.8	7.7	7.7	6.9	7.8	7.8	8.1	8.7	8.5
	N	425	118	137	119	469	338	71	472	456	722	118	85
15. Year 2000	$\overline{X}$	11.2	11.2	10.3	11.6	12.7	11.2	13.1	11.5	11.9	11.8	10.9	11.7
	SD	3.4	3.3	3.7	3.1	2.9	3.3	3.0	3.4	3.2	3.2	3.5	3.3
	N	424	118	136	119	469	338	71	471	456	722	118	84
16. Similar Figures	$\overline{X}$	5.4	4.1	2.1	9.2	7.2	4.1	11.5	3.9	8.5	6.1	5.9	6.6
	SD	6.6	5.3	3.2	7.6	7.4	5.3	8.7	4.9	7.9	6.8	7.4	7.5
	N	426	118	137	120	467	336	71	472	455	722	117	85
17. Arithmetic Speed	$\overline{X}$	45.6	47.3	41.7	46.3	48.0	47.9	47.8	44.8	47.6	46.6	43.8	45.7
	SD	14.7	14.7	13.7	15.4	13.5	13.6	14.2	13.7	14.0	14.0	14.8	12.0
	N	426	118	137	120	467	336	71	472	455	722	117	85
18. Sentence Completion	$\overline{X}$	31.6	32.7	31.9	30.0	33.0	33.3	31.3	34.1	30.1	32.5	31.3	30.4
	SD	12.7	12.6	13.4	11.8	12.5	12.8	11.1	12.8	12.0	12.5	12.5	12.9
	N	425	117	137	120	467	336	71	471	455	722	116	85
19. Biology	$\overline{X}$	18.3	14.6	23.5	18.1	16.9	17.1	16.2	18.8	17.0	18.0	17.7	17.3
	SD	8.5	7.8	6.5	8.1	8.3	8.2	8.1	8.2	8.5	8.3	8.2	8.8
	N	421	116	137	117	466	335	71	469	450	715	118	83
20. English	$\overline{X}$	18.1	19.1	20.3	15.3	18.9	20.3	14.3	21.1	16.3	18.9	18.4	17.8
	SD	8.0	7.9	7.7	7.5	8.1	7.7	8.0	7.1	8.2	8.0	8.2	7.8
	N	421	116	137	117	466	335	71	469	450	715	118	83

Table G-1 (continued)

Variable		Career Programs				Transfer Programs			Sex		Second Semester Status		
		Combined Career Programs	Business Programs	Nursing Program	Technology Programs	Combined Transfer Programs	Liberal Arts Program	Engineering Science Program	Women	Men	Continuing Full Time	Continuing Part Time	Not Continuing
21. Fine Arts	$\bar{X}$	17.9	18.0	18.8	17.1	17.7	17.6	8.7	20.1	15.7	18.2	17.1	17.4
	SD	8.1	8.0	8.1	7.4	8.7	8.8	8.0	8.2	7.9	8.3	8.4	8.5
	N	421	116	137	117	466	335	71	469	450	715	118	83
22. Mathematics	$\bar{X}$	18.0	14.9	16.7	21.6	19.2	17.5	26.2	16.5	21.2	19.0	18.3	18.0
	SD	8.8	9.2	8.9	7.4	9.0	9.1	5.5	9.0	8.5	9.0	9.2	9.8
	N	421	116	137	117	466	335	71	469	450	715	118	83
23. Social Sciences	$\bar{X}$	20.3	21.4	21.2	18.8	21.3	22.0	18.9	21.4	20.8	21.3	20.8	19.5
	SD	8.5	8.5	7.8	8.5	8.7	8.6	8.4	8.3	8.7	8.4	8.3	9.6
	N	421	116	137	117	466	335	71	469	450	715	118	83
24. Secretarial	$\bar{X}$	18.9	23.9	15.6	16.8	16.8	16.3	16.4	18.6	16.7	17.7	17.3	18.7
	SD	7.0	5.3	6.9	6.0	6.7	6.9	5.7	7.3	6.4	7.0	6.6	6.6
	N	421	116	137	117	466	335	71	469	450	715	118	83
25. Physical Sciences	$\bar{X}$	17.8	12.5	17.8	23.7	18.4	16.9	25.2	15.0	21.9	18.5	18.1	17.2
	SD	9.0	8.5	8.1	6.5	9.5	9.5	6.7	8.9	8.2	9.3	9.0	9.6
	N	421	116	137	117	466	335	71	469	450	715	118	83
26. Foreign Languages	$\bar{X}$	20.8	21.0	24.7	17.3	20.1	21.5	15.2	24.2	17.5	21.1	20.4	20.7
	SD	9.5	9.5	7.4	9.6	10.0	9.6	9.7	7.8	10.1	9.5	9.6	10.2
	N	421	116	137	117	466	335	71	469	450	715	118	83
27. Music	$\bar{X}$	17.6	16.5	19.8	16.8	17.7	18.2	16.4	19.4	16.6	17.9	18.5	18.4
	SD	8.1	8.5	7.2	8.4	8.1	8.2	7.5	7.5	8.3	8.1	7.8	7.5
	N	421	116	137	117	466	335	71	469	450	715	118	83
28. Engineering	$\bar{X}$	15.9	12.3	11.5	24.0	17.3	15.0	27.6	11.5	22.2	16.8	16.3	17.3
	SD	10.2	8.9	8.3	8.7	9.5	8.9	4.9	8.3	8.5	9.9	10.3	10.1
	N	421	116	137	117	466	335	71	469	450	715	118	83
29. Home Economics	$\bar{X}$	21.0	21.6	26.1	16.4	17.7	18.5	14.6	24.7	14.2	19.8	19.3	18.5
	SD	8.0	7.8	4.3	7.3	8.4	8.4	6.9	5.7	7.0	8.2	8.4	8.7
	N	421	116	137	117	466	335	71	469	450	715	118	83
30. Executive	$\bar{X}$	18.3	22.4	14.6	16.8	17.4	16.7	17.4	16.9	18.4	17.6	17.4	17.7
	SD	7.2	6.0	6.7	6.7	6.6	6.5	7.0	7.0	6.7	6.8	7.1	7.2
	N	421	116	137	117	466	335	71	469	450	715	118	83

Table G-1 (continued)

Variable		Career Programs				Transfer Programs			Sex		Second Semester Status		
		Combined Career Programs	Business Programs	Nursing Program	Technology Programs	Combined Transfer Programs	Liberal Arts Program	Engineering Science Program	Women	Men	Continuing Full Time	Continuing Part Time	Not Continuing
31. Persistence	$\bar{X}$	16.2	16.6	18.2	14.7	15.0	14.7	17.0	16.3	15.0	15.8	15.7	14.0
	SD	7.3	7.6	7.2	6.9	7.3	7.2	8.1	6.8	7.7	7.4	7.2	6.8
	N	378	105	116	108	438	315	65	423	412	656	104	73
32. Self-control	$\bar{X}$	11.6	11.9	13.4	10.0	10.9	11.3	9.9	12.8	9.7	11.4	10.9	10.6
	SD	3.8	3.6	3.1	3.8	3.9	3.8	3.6	3.2	3.8	3.8	4.4	3.4
	N	378	105	116	108	437	314	65	423	411	656	104	73
33. Grade Point Average	$\bar{X}$	1.93	2.18	1.82	1.74	2.02	2.03	1.85	2.03	1.85	2.08	1.33	1.44
	SD	.79	.77	.70	.88	.66	.63	.72	.70	.75	.66	.68	.79
	N	397	113	134	111	442	325	67	487	421	727	116	48

APPENDIX H

End of Term Questionnaire Group Means, Standard Deviations and Correlations

Table H-1

Means, Standard Deviations, and Intercorrelations of the Two Parts of the End of Term Questionnaire

Program		Part 1	Part 2	Total	Correlation Parts 1 and 2
All Career (N=283)	Mean	40.7	41.3	82.0	.54
	SD	5.6	6.7	10.8	
Business (N=98)	Mean	41.3	41.2	82.5	.59
	SD	6.1	7.0	11.7	
Nursing (N=92)	Mean	39.6	42.5	82.1	.60
	SD	5.6	6.6	11.0	
Technologies (N=93)	Mean	41.1	40.1	81.2	.49
	SD	4.8	6.3	9.6	
All Transfer (N=387)	Mean	39.6	39.9	79.5	.55
	SD	6.3	6.8	11.5	
Engineering Science (N=60)	Mean	39.0	40.6	79.6	.62
	SD	7.3	7.0	12.8	
Liberal Arts (N=284)	Mean	39.7	39.8	79.5	.53
	SD	6.1	6.7	11.3	